

COMPUTERWORLD

SOUR NEWS ABOUT SUITES:
CW GUIDE TO APPLICATION
SUITES, page 94

'Stealth users' pose threat to NetWare 4

By Laura DiDio

Just when NetWare administrators thought they had mapped out the major minefields in NetWare 4.x, up pops a new threat to enterprise security: the "stealth user."

While more finely tuned than that found in the previous version of NetWare, the security built in to Novell, Inc.'s NetWare 4.x and its NetWare Directory Services has more potential loopholes. Administrators can unwittingly expose

their businesses to users who can furtively peruse databases, file servers and departments throughout the network as undetected, invisible network moles.

And compromising NetWare 4.x security carries far more serious consequences than similar security lapses in older versions of the network operating system. Security breaches in NetWare 3.x LANs affected only a single file server or departmental LAN. In NetWare

Stealth users, page 131

Moving up to ATM

StrataCom's multi-interface switch to cut bandwidth costs

By Laura DiDio

Seeking an early lead in the fledgling ATM enterprise switch market, StrataCom, Inc. this week will unveil a 1.2G-bit switch said to support voice, data and video at speeds of 1.2K to 155M bit/sec. ATM, *Computerworld* has learned.

The new Integrated Gigabit Exchange, which will ship immediately, is StrataCom's first foray into the private Asynchronous Transfer Mode enterprise switch market.

The IGX will also fill the midrange gap in the company's product portfolio and support carrier-type applications for smaller value-added

networks, sources close to the company said.

Users could deploy this switch to replace legacy time division multiplexer devices and routers and, in the process, save thousands of dollars in monthly bandwidth charges, analysts said.

"The StrataCom IGX can potentially save users 5% to 20% in recurring monthly bandwidth charges. And I expect the IGX could pay for itself in 12 to 18 months based on monthly savings in bandwidth alone," said Eric Hindin, senior network consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.



Northeast Utilities' John Boyd says StrataCom's ATM switches could save net managers time and money

On-line boundaries unclear

Internet tramples legal jurisdictions | Prodigy ruling could chill IS plans

By Mitch Betts and Gary H. Anthes

"Welcome to the World's Largest Casino!" blares the sign in garish colors. But this isn't Las Vegas; it's cyberspace. And the sign is really only a handful of bytes on a server located on the Dutch side of St. Maarten.

The offshore Internet Casino, Inc. goes on-line this month with digital blackjack, poker, slot machines and the like. But there is one small problem: Gamblers who make virtual visits to the Internet Casino could face fines or jail time under federal and state laws that prohibit on-line gambling.

The on-line world's lack of respect for state and national borders is making a mockery of out-

Legal jurisdictions, page 16

By Ellis Booker and Gary H. Anthes

Corporate users building businesses on the Internet had better pay attention to the legal ramifications of the recent decision in a \$200 million libel suit against Prodigy Services Co.

A New York state court ruled that Prodigy's editing of content on its on-line service placed it in the class of "publisher," thereby exposing it to a libel claim. If upheld, the ruling could have unwelcome consequences for corporate users building an on-line presence.

Legal experts said the case highlights the risks faced by any company that puts information out before the vast on-line commu-

Prodigy ruling, page 16



Visiting Internet Casino's home page could mean fines or jail time, depending on where you live

Skates on thin ice with DG users

By Neal Weinberg

Loyal but increasingly edgy Data General Corp. users have taken the unprecedented step of asking Chief Executive Officer Ron Skates for a face-to-face meeting to discuss the company's product directions.

Last week, Skates agreed to the meeting with representatives of the North American Data General Users Group, although a date has not been set.

Chief among the user worries is that the Motorola, Inc. 88000 microprocessor that powers DG's hardware is running out of steam. Customers are also having trouble finding software to run on

DG's Avilion Unix boxes. And despite numerous restructurings, DG has lost money in eight of the past nine years.

DG, page 12

Smarten up!

Can "knowledge management" help companies work smarter, better and faster? If early adopters such as GM, Skandia and others are right, this emerging trend will mean both new opportunities and new headaches for IS. **MANAGEMENT, PAGE 84**



Brian Kopp

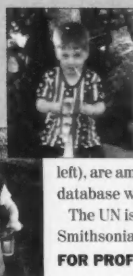
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Making a difference

In the former Yugoslavia, a CD-ROM system is being used to reunite families separated by war. Benjamin Smalbogovic, 2 (top left), and his sister, Murisa, 4 (bottom left), are among the 5,500 children listed on the United Nations-supported database who hope their parents find them.

The UN is one of 50 finalists for the Seventh Annual Computerworld Smithsonian Awards, which honor applications that benefit society.

FOR PROFILES OF FINALISTS, SEE IN DEPTH, PAGE 101

■ Two weeks after Computer Associates announced it would buy Legent for \$1.8 billion, the realities of **merging product lines** has begun to raise concerns in some parts of the user community. **NEWS, page 2**

■ **Systems integration vendors are losing market share** to faster, more flexible boutique firms. **NEWS, page 4**

■ A coalition promoting **network interoperability** is struck down by the House of Representatives. **NEWS, page 8**

■ An upcoming version of the Open Software Foundation's **Distributed Computing Environment software** has been split into two releases, and most of the promised goodies are being delayed from this fall until mid-1996. **NEWS, page 10**

■ **Version 4 of Notes is delayed**, but users are not too worried. **NEWS, page 12**

■ The **Federal Communications Commission** issues its Integrated Services Digital Network price-cutting proposal. **NEWS, page 15**

■ **Dun & Bradstreet Software's** code modification lawsuit with Grace Consulting spills over into the customer base and ticks off users. **NEWS, page 24**

■ **Microsoft Windows NT-based servers** are still playing catch-up to other kinds of boxes. **DESKTOP COMPUTING, page 45**

■ There are ways to **reduce the stress level of help desk personnel**. Nina Kawalek says. **DESKTOP COMPUTING, page 46**

■ **Novell promises a client/server version** of its groupware product by the end of next March. **WORKGROUP COMPUTING, page 49**

■ Simply equipping a sales force with mobile computers isn't enough. **Sales professionals must be integrated** into the enterprise with full access to key corporate data. **WORKGROUP COMPUTING, page 49**

■ A new software package connects **disparate E-mail systems**. **ENTERPRISE NETWORKING, page 56**

■ Little computers can do the job of big systems, it seems. A **cluster of Unix workstations** at three universities will turn the network into a computer this summer. IBM unveils its **mainframe-in-a-PC box**. **LARGE SYSTEMS, page 65**

■ **AT&T Solutions** has moved into managing applications in addition to outsourcing. **LARGE SYSTEMS, page 73**

■ SAP and Dun & Bradstreet Software are on track with their plans to release **distributed versions of their applications**. **LARGE SYSTEMS, page 73**

■ Mainframe shops are running headlong into a new client/server world order in which **developing new applications can be easier than deploying them**. **APPLICATION DEVELOPMENT, page 79**

■ **Aerospace industry jobs** are drying up, but recent contracts have spawned hundreds of IS openings at select firms. **CAREERS, page 107**

■ Integrated **"Works" packages** can't compare to the likes of Microsoft Office on the features front, but fewer storage and memory requirements may appeal to some. **MARKETPLACE, page 120**

■ **Software suites** may seem affordable on the surface, but beware of hidden costs and interoperability and complexity problems. **CW GUIDE, page 94**

■ Dissatisfied customers can always vote with their feet — or their mugs, **Bill Laberis** points out. **VIEWPOINT, page 36**

■ Groupware is largely irrelevant to the way people do their jobs, **Michael Schrage** says. **VIEWPOINT, page 37**

■ Access to information has to improve ASAP, **Marcia Blumenthal** says. **VIEWPOINT, page 37**

■ By backing off the Intuit deal, Microsoft recognizes that its greatest opportunity still lies in the commercial market, not the consumer world, **Charles Babcock** says. **COMMENTARY, page 132**

Calendar has a new look!

Our comprehensive list of events is now easier to read.
See page 93.



Executive Briefing

In Internet news this week: Netscape adds a shrink-wrapped, retail package to its browser family; a full-duplex Internet phone debuts; and outsourcing flourishes. **Pages 14 and 20.** Products emerge to help honest folks pay royalties for on-line information, and a shareware videoconferencing tool goes commercial. **Page 58**

As the global network makes national boundaries all but meaningless, the U.S. lacks the policies and legal framework for dealing with electronic attacks; "stealth users" make an appearance on Novell networks. **Cover 1 and Page 55.** The number of security products is growing, though. A PC virus protection product causes a controversy; **Xyplex** adds security features to its hub family; and a new utility scans NetWare networks for unauthorized users. **Pages 41, 57 and 131**

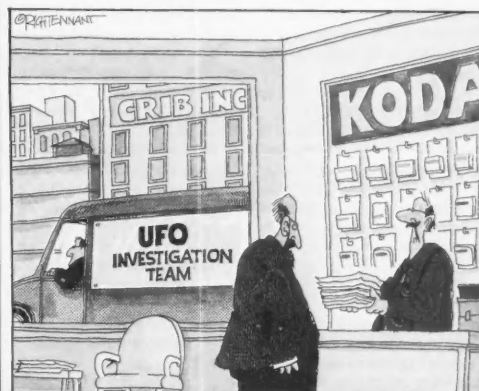
Microsoft previews tools for writing Windows applications and prepares to demonstrate new versions of SQL Server, Visual Fox-Pro and other packages at PC Expo. **Pages 2 and 6.** There's a big brou-ha-ha brewing between Microsoft and other electronic messaging vendors as **Lotus** and **Novell** accuse Microsoft of not playing fair with its Messaging Application Programming Interface specifications. **Page 29**

Hewlett-Packard enhances its OpenView systems and network management products. **Page 4.** **McAfee Associates** buys a client/server systems management vendor. **Page 32**

A surprise database decision ensues from USF&G, a large insurance firm. **Page 29.** **Red Brick** has a tough time competing with the big database players. **Page 32.** **Oracle** plans a version of its database designed specifically for warehousing. **Page 77.** Meanwhile, more products are available to help bridge the gap between object-oriented applications and relational databases. **Page 77**

Upcoming PowerPC announcements from **Apple** and **IBM** are expected to give the platform a much needed boost. **Page 6.** **IBM** pulls out all stops to lure developers to OS/2. **Page 45**

The 5th Wave by Rich Tennant



"I'VE GOT SOME IMAGE EDITING SOFTWARE, SO I TOOK THE LIBERTY OF ERASING SOME OF THE SMUGGLES THAT KEPT SHOWING UP AROUND THE CLOUDS. NO NEED TO THANK ME."

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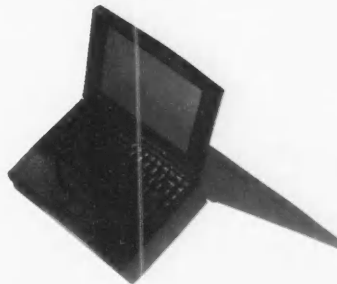
How much battery life?

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Legent users jittery about vague CA merger plans

By Thomas Hoffman

Two weeks after Computer Associates International, Inc. announced it would buy Legent Corp. for \$1.8 billion, the realities of merging product lines began raising concerns in some parts of the user community.

CA executives offered scant details about their Legent product integration plans at a joint press conference last week. The uncertainty that often rides between an acquisition and a firm statement of direction is now fueling Legent customer concerns.

Sanjay Kumar, CA president and chief operating officer, confirmed that the Islandia, N.Y., company plans to tighten the integration between CA-Unicenter, Legent's XPE products and BMC Software, Inc.'s Patrol intelligent agent software.

"Does this mean we're going to have to be dependent upon CA-Unicenter?" asked an uncomfortable Joe Jedynak, a technical support manager at *The Hartford Courant* in Hartford, Conn.

Jedynak, whose shop recently acquired Legent's Cross-Platform Environment (XPE) systems management software, said he is reluctant to see that software integrated into CA-Unicenter. That is because he finds the CA package "very, very expensive" and lacking in areas such as help desk management and capacity planning.

Wait a minute

"The news certainly stopped us in our tracks, especially with the initiatives we had going on with Legent," said David Ward, manager of worldwide network operations at American Greeting Corp. in Cleveland. The greeting card maker had planned to install Legent's AgentWorks intelligent agent software on top of RISC-based machines, but that idea has been put on hold until the firm can assess the support, maintenance and cost issues following CA's ownership of this product, Ward said.

"All of those [issues] are subject to the whims of Computer Asso-

ciates, but they become absolutely critical to us as a user of these products," he added.

Industry analysts have generally characterized the Legent acquisition as a major boost for CA's future earnings potential and expansion into the client/server market.

Enhancing services

CA plans to absorb many of Legent's 500 technical services group employees. That's because it wants to beef up its professional services offerings for customers who seek help implementing large-scale versions of the CA-Ingres relational database and CA-Unicenter systems management technology, said Charles B. Wang, CA's chairman and CEO.

But "the view for users is decidedly negative," said Dale Gardner, an analyst at Meta Group, Inc. in Reston, Va. "Although alternatives to CA/Legent do exist, the further elimination of competition will reduce choice and prop up prices, negatively affecting users," Gardner said in a Meta Group report issued last week.

Furthermore, CA plans to "bolt" Legent's Paradigm/XP help desk and problem management software, as well as Legent's Distribute-Link software distribution products, onto

CA-Unicenter, said Charles B. Wang, CA's chairman and chief executive officer.

When the CA/Legent acquisition was announced, some Legent customers expressed optimism that they would be able to buy Legent

software at fire sale prices. In fact, one information systems manager at a Midwestern apparel distributor who requested anonymity said he was able to purchase IBM DB2 utility software from Goal Systems International, Inc. at a significant discount just prior to that company's acquisition by Legent in 1992. Goal Systems' salespeople "wanted to make a commission while they still could," he said.

However, under its proposed acquisition of Legent, CA has the right to review all customer contracts of unusual size that are made before the deal closes in July, Wang said. "Nobody's going to do any bastard business," he added.

Uncertain future

That is bad news for Legent sales representatives, who along with the bulk of the Herndon, Va.-based company's administrative staff face the unwelcome prospect of cleaning out their desks during the next six months. Although Wang said his firm is giving Legent's 700 salespeople first crack at the 500 field-office openings CA has available, the cultural transition for those who are retained is likely to be thorny at best.

"For people who have been here a long time, it's been embedded in their blood to compete against CA, to hate them and to win," said a Legent salesperson who requested anonymity.

Senior editor Steve Moore contributed to this report.

When opportunity knocks...

Like vultures to roadkill, it didn't take long for Computer Associates' competitors to swoop down and take advantage of the confusion in the Legent customer ranks.

Boole & Babbage, Inc. last week rushed out a special program aimed at converting Legent data center automation products, such as Automate, to Boole & Babbage's MainView AutoOperator package within a matter of days — without requiring developers to rewrite a single line of code.

"The program is actually for anybody, but we thought [CA's plans to acquire Legent represented] a good opportunity to promote it," said John Connor,

director of automation products at the San Jose, Calif.-based provider of enterprise automation software. Connor said the Legent program follows a similar program that Boole & Babbage has been offering to users of Candle Corp.'s AF/Operator for MVS in the past year.

During the past year, Boole & Babbage has lured 40 Candle, IBM and other customers to its AutoOperator package, according to Tim Dreisbach, senior vice president of sales at the \$150 million firm.

Connor estimated Legent's worldwide Automate customer base to be 750 installed sites.

— Thomas Hoffman

Microsoft previews tools for Windows 95

By Elizabeth Heichler
SANTA CLARA, CALIF.

Developers building applications for Microsoft Corp. platforms got a first look last week at tools the company plans to offer when it finally ships the Windows 95 operating system later this year.

At the Microsoft Foundation Classes (MFC) developers' conference held here, Microsoft revealed some highlights of the forthcoming Visual C++ 4.0 development environment to some 2,000 attendees. Those features are intended to ease the pain of writing 32-bit Windows applications. Visual C++ 4.0 will ship within 30 to 90 days of Windows 95 general availability, according to the company.

But corporate developers were in the minority compared with independent software vendors and commercial developers at the sold-out technical conference. Several said that although they are using the MFC class library (see box) to write C++ applications for Windows NT, they aren't ready yet to migrate their shops to Windows 95.

And while Microsoft's development tools are moving into the 32-bit world, continued support for 16-bit development aimed at the Windows 3.1 desktops that dominate corporate

America was a concern for this group.

Windows framework

Microsoft Foundation Classes, or MFC, is a C++ class library — a set of reusable source code — that provides developers with a framework for building Windows applications. Developers can use the MFC code to provide basic Windows functionality and also to write Windows-compatible applications that take advantage of new 32-bit technologies, such as OLE and ODBC.

For example, until users at New York financial services company Dreyfus Corp. are ready to move to Windows 95, many of the new features in MFC 4.0, which will be included with Visual C++ 4.0, will not be important to senior programmer analyst Siegfried Titsch.

"It's just a matter of time before users move to Windows 95, but we can't twist

their arms," Titsch said, citing the need for hardware upgrades and the constraints of users' departmental budgets as factors slowing the migration to the new operating system. Titsch uses Visual C++ for large, number-crunching problems where Visual Basic does not offer sufficient performance, and he just recently began working with Windows NT.

Help for 32-bit development

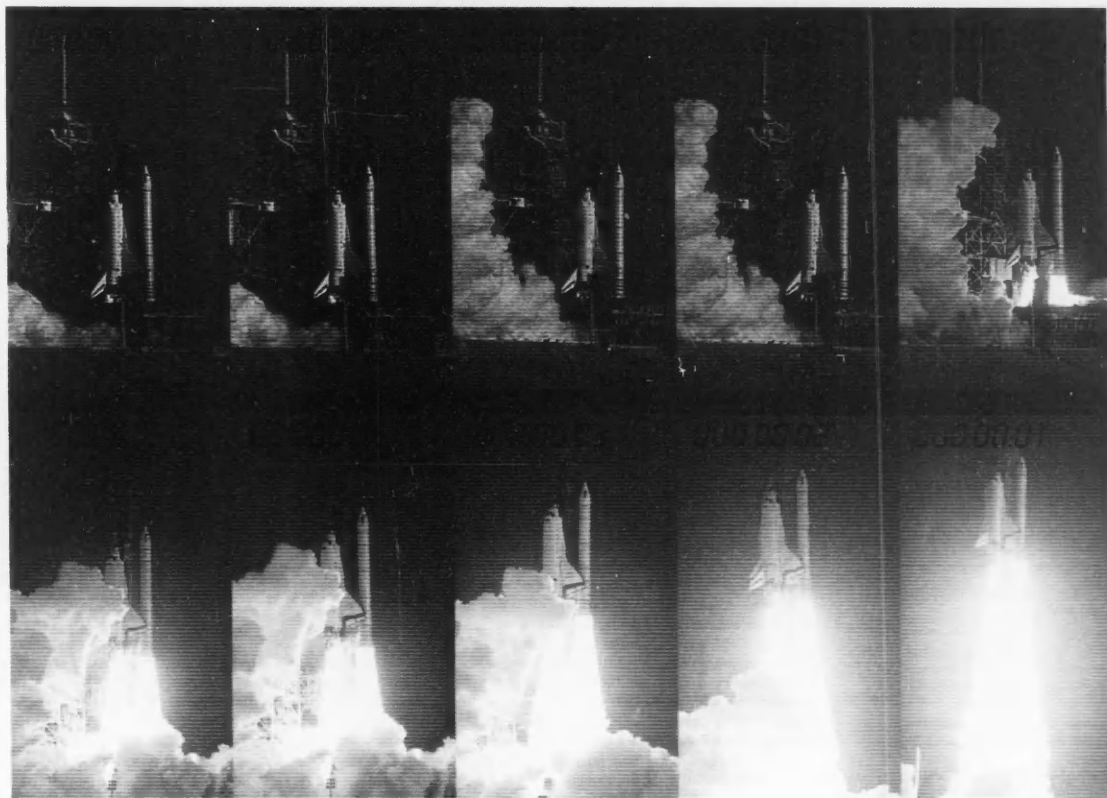
Developers who have made the move to the 32-bit world said the improved support for easier OLE programming found in MFC 4.0 is welcome news.

OLE is Microsoft's object technology that allows applications to be launched from within other applications and provides a standard interface, allowing pre-existing building blocks, called OLE controls, to be incorporated into programs.

MFC 4.0 will include OLE container support, which means developers will be able to use off-the-shelf OLE controls or build them into their applications. Currently, MFC provides tools for building these controls but does not give developers a way to use the resulting components.

The addition of a data access object that provides a direct connection to the Jet database engine found in Microsoft Access and Visual Basic will be helpful to Jose Mascaro, a developer at System One Corp. The Miami-based company builds information management systems for the travel industry. Mascaro anticipates that the data access object, which can be used as an alternative to the Open Database Connectivity (ODBC) interface, will speed application performance.

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HP bolsters OpenView for distributed nets

By Patrick Dryden

■ **Striving to meet demands for scalable control of distributed computing environments, Hewlett-Packard Co. introduced major upgrades to OpenView network and systems management products last week.**

Version 4.0 of Network Node Manager, the foundation of the OpenView framework, lets more operators monitor more nodes through a sleeker interface and offers a cheaper license for branch sites. Version 2.0 of OperationsCenter, the problem-management service, extends interactive control throughout domains of an enterprise.

HP's OpenView enhancements

Network Node Manager Version 4.0 (core network management platform), which is due in October, will include the following:

■ CLIENT/SERVER DESIGN

- More operator consoles
- Ability to handle bigger networks

■ IMPROVED INTERFACE

- Quick view into network map
- Tool bar, hypertext on-line help and event browser
- Vendor-specific menus

■ ORACLE AS DATA REPOSITORY OPTION

■ SMALL-SITE PACKAGE: \$5,000 FOR UP TO 100 DEVICES

OperationsCenter Version 2.0 (central problem manager for systems/networks), which is due in August, will include the following:

■ MANAGER-TO-MANAGER COMMUNICATION

- Hierarchy for monitoring and escalating problems
- Centers of expertise established
- Responsibility shifted by time zone
- Backup center takes over in emergency

■ API FOR MANAGING LEGACY SYSTEMS

- Prevail/XP by Legent
- Command/Post and Ensign by Boole & Babbage

Still, these first two portions of HP's slow-evolving Tornado project will not be available until later this year, along with two upgrades to storage management products. Tornado encompasses HP's efforts to make OpenView a fully distributed, scalable and object-oriented manager of all components of an enterprise network.

Introducing them now lets HP whet the appetites of attendees at the OpenView Forum users' conference June 18-23 in Seattle.

But OpenView users are already hungry for the main course. One of the forum topics, for instance, is "Scalability for OpenView: Surviv-

ing Until Tornado."

"We need these upgrades now so we don't have to build our own software to offset limitations in Network Node Manager and OperationsCenter," said Brennan Carley, vice president of information technology at New York-based Instinet Corp., an institutional brokerage firm. "HP is addressing our needs but not as quickly as we would like."

Waiting game

Network Node Manager has not scaled very well as the network for Duke Power Co. in Charlotte, N.C., has grown to require 22,000 objects in the OpenView database, said Paul Edmunds, an information technology professional responsible for management.

"With the performance problems we're experiencing now, surviving until the October release of Version 4.0 will be difficult," Edmunds said. "But HP is going in the right direction with Phase 1 of Tornado."

The new Network Node Manager splits the display console function from the management server to free CPU cycles and from 40% to 60% of memory, said Gordon MacKinney, OpenView program manager for HP's network and systems management division.

The client/server design boosts response rate and the number of nodes monitored by 50%, MacKinney said.

With about 50,000 managed devices in its internal network, US West Communications, Inc. in Denver rates Network Node Manager's performance acceptable, given the promise of extended management via the new OperationsCenter capabilities.

"You'll exceed the capability of the human operator before the capability of any serious management platform," said Rick Sturm, US West technical staff member. "That's why we need to create a hierarchy of management personnel: Then we can refer or escalate a problem to the subject-matter experts wherever they may be."

Goliaths losing ground in systems integrator market

Users say smaller shops offer faster, customized solutions and services

By Julia King

Companies in the market for a systems integrator are going "boutique shopping" — turning to relatively small companies for help developing multimillion-dollar, mission-critical business applications.

This trend could be a threat to the big guns, according to a report issued last week by ParaTechnology, Inc., a market research and consulting company in Bellevue, Wash. Last year, the largest integrators, including Andersen Consulting and Electronic Data Systems Corp., lost a 4% share of the booming \$50 billion integration services market to smaller, more nimble competitors, the report said.

Users say the boutiques are faster, cheaper and far more skilled in client/server, object-oriented and other advanced technologies.

They are also more adept at devising customized solutions and are willing to partner with clients rather than just pay lip service to the concept during sales pitches, customers added.

Happy camper

Consider the case of Steve Little, vice president of information services at Square D Co., a \$2 billion manufacturer of electrical equipment in Palatine, Ill.

Little solicited four providers to bid on a \$20 million project involving the company's order-entry and shipping systems. Respondents included \$3 billion Andersen Consulting and Technology Solutions Co. (TSC), a \$53 million company in Chicago specializing in client/server projects.

"TSC came in and spent two weeks in my office, analyzing my project and basically laying out a project plan," Little said. "They brought in their experts and talked to my database people and my telecommunications people. And we didn't pay for any of that time up front."

Andersen, by contrast, "pretty much gave me a boilerplate proposal," Little said.

John Charles, assistant director of information technology at Harvard University, said he was impressed when Innovative Information Systems, Inc. in Norwood, Mass., sent company president Mark Shirman to present its proposal for migrating several mainframe systems to a client/server environment.

Like Little, Charles also had solicited bids from larger vendors, including IBM's Integrated Systems Solutions Corp., "but they just weren't as flexible, and the pricing was not very close at all," he said.

"Also, the feeling we had is that trying to work with some of the larger outfits was a very protracted process," he added. "We wanted people we felt were schooled in the newer, rapid application development technologies."

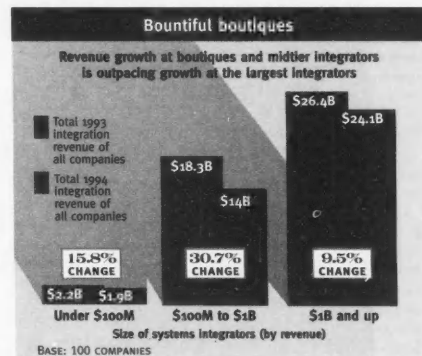
Fast-growing companies that fall into the

boutique category include Analytical Technologies, Inc. in Bingham Farms, Mich., BSG in Houston and Cambridge Technology Partners in Cambridge, Mass.

"Every year, there has been an increase in the number of customers and projects being directed at integrators," said Peter Raulerson, president and chief executive officer of ParaTechnology. "This has resulted in 40% to 50% growth for smaller boutique companies but only about 15% to 20% for the very largest companies."

Change of plans

Users' readiness to hire smaller, less well-known companies for high-profile projects marks a major change on the systems integration front.



"Five years ago when we were out in the marketplace, we were attractive only to the renegade IS departments," said Bob Gett, president of Cambridge Technology Partners, a client/server integrator known for fixed-base pricing, which is something of an anomaly in the consulting/systems integration world.

Today, by contrast, most clients are more concerned with completing projects on time, "so we don't see very much resistance to us on the basis of our size," Gett added. "Companies see losing time as a far greater risk than the size of their integration partner."

That is also the way IS Vice President Kevin Godsey saw it when he hired BSG for a multimillion-dollar client/server integration project at Kirby Corp., a \$500 million marine transportation company in Houston.

"But we didn't automatically deliver the project to BSG," Godsey added. "We looked at the Big Six firms, but what we found is that they were still struggling to make the transition to client/server themselves."

Still, there is no threat of boutiques surpassing the largest integrators any time soon, according to Bonnie Digrius, an analyst at Gartner Group, Inc. in Stamford, Conn.

"Right now, there is more than enough work for everybody," she added. "What I see is the smaller firms more nipping at the heels of the larger ones rather than taking market share."

AT&T Solutions moves beyond outsourcing. See page 73.

COMPARE MAINFRAME DATA ACCESS

Sybase

71 lines proprietary code

```

MOV
CALL PERFORM SEND-ERROR-MESSAGE.
TDINPR MOV
MOV
PER
END-IF.
CALL 'TDSSETBCD' USING GWL-PROC, GWL-RC, TDS-OBJECT-COL,
GETPAR CTR-COLUMN, TDS-DEFAULT-LENGTH.
CALL 'TDS'
CALL 'TDS'
END-IF.
CALL 'TDS'
EXEC SQL WHENEVER SQLWARNING CONTINUE END-EXEC.
EXEC SQL WHENEVER SQLERROR CONTINUE END-EXEC.
EXEC SQL WHENEVER NOT FOUND CONTINUE END-EXEC.
CALL 'TDINT' USING DFWBLK, GWL-RC, GWL-INT-HANDLE.
CALL 'TDACCEPT' USING GWL-PROC, GWL-INT-HANDLE,
SMA-CONNECTION-NAME, SMA-SUBC.
CALL 'TDRESULT' USING GWL-PROC, GWL-RC.
IF GWL-RC NOT = TDS-PARM-PRESENT THEN
PERFORM TDRESULT-ERROR
GO TO END-PROGRAM
END-IF.
MOVE TOP SECRET TO GU-ACCESS-CODE
CALL 'TDSUSER' USING GWL-PROC, GWL-RC, GU-ACCESS-CODE,
GU-USER-ID, GU-PASSWORD, GU-SERVER-NAME,
GU-CLIENT-CHARSET, GU-NATIONAL-LANG,
GU-SERVER-CHARSET, GU-SERVER-DBCS,
GU-APP-ID.
IF GWL-RC NOT = TDS-OK THEN
PERFORM TDUSER-ERROR
GO TO END-PROGRAM
END-IF.
CALL 'TDNUMPRM' USING GWL-PROC, GWL-NUMPRM-PARMS.
IF GWL-NUMPRM-PARMS NOT = 2 THEN
PERFORM TDNUMPRM-ERROR
GO TO END-PROGRAM
END-IF.
MOVE 1 TO GWL-INPRM-ID.
PERFORM GET-PARM-INFO.
IF GWL-INPRM-STATUS NOT = TDS-RETURN-VALUE THEN
PERFORM TDINPRM-NOT-RETURN-PARM-ERROR
GO TO END-PROGRAM
END-IF.
MOVE GWL-INPRM-USER-DATA TO GWL-SETPRM-USER-DATA.
MOVE GWL-INPRM-ID TO GWL-SETPRM-ID.
MOVE GWL-INPRM-DATA-L TO GWL-SETPRM-DATA-L.
MOVE GWL-INPRM-TYPE TO GWL-SETPRM-TYPE.
MOVE @PARM2 TO GWL-INPRM-NAME.
MOVE 6 TO GWL-INPRM-NAME-L.
CALL 'TDLOCPRM' USING GWL-PROC, GWL-INPRM-ID,
GWL-INPRM-NAME, GWL-INPRM-NAME-L.
PERFORM GET-PARM-INFO.
IF GWL-INPRM-TYPE NOT = TDS-VARY-CHAR THEN
PERFORM TDINPRM-NOT-CHAR-PARM-ERROR

```

** Taken directly from Sybase Open/Server Mainframe COBOL Programmer's Reference, pgs. C-3 through C-14. © 1994.

Oracle

0 lines proprietary code

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To access mainframe data with Sybase's "Open Server" you must rewrite your existing mainframe transactions and embed dozens of Sybase proprietary interface calls. With Oracle, your existing mainframe transactions run without modification.

The Sybase code on the left queries rows from one DB2 table and returns those rows to the client. This simple query example, taken directly from Sybase's "Open Server/Mainframe COBOL Programmer's Reference" manual, requires you to embed 71 lines of proprietary Sybase gateway code into a 222 line mainframe COBOL program. In contrast, Oracle's "Procedural Gateway for APPC" uses standard IBM APPC interfaces, so you can access mainframe data using your existing mainframe transactions without modification. If you want easy-to-use, standards-based, fast mainframe data access technology call Oracle at **1-800-633-1071 Ext.8118.**

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Step right up to see Microsoft's latest

Company to demonstrate slew of upgrades at PC Expo

By Stuart J. Johnston

With updates to a slew of key products due to ship by the end of the month, Microsoft Corp. will demonstrate those technologies to users attending PC Expo in New York in two weeks.

No gala launches of those products are planned at the show, but Microsoft officials said they will use the annual PC confab to give users a closer look at the following products before they ship. They include SQL Server 6.0, Visual FoxPro, Windows NT 3.51 and Office 95, a version of the company's productivity applications suite that specifically supports Windows 95, which is due to ship Aug. 24.

High on the list, as far as users are concerned, is a glimpse at SQL Server 6.0, an eagerly awaited update of the company's relational database that will add important replication features.

"Replication services [are] going to open up a whole new world," said Bill Cornfield, president of The Windows Support Group, a consultancy in New York. SQL Server 6.0 "gives you the ability to really, truly distribute databases. Right now, we're bidding on a contract to manage about 20 servers worldwide [for a customer], and it's simple enough that we can do it from New York," he said.

"SQL Server 6.0 is crucial to us," said Arthur Tisi, chief infor-

mation officer at the Metropolitan Museum of Art in New York. "There are [functions such as replication] in 6.0 that we have absolutely become reliant on."

Also important to users is the pending release of Windows NT 3.51, an update that adds support for IBM and Motorola, Inc. PowerPCs.

"The mere fact that [NT] made it onto IBM's PowerPCs before OS/2 [shows that] it's gaining momentum," said Duncan Davidson, vice president of Gemini Management Consulting, Inc. in San Francisco.

Cornfield, whose clients include the National Football League, Anheuser-Busch Cos. and American Express Corp.'s Gold Card division, said he also

looks forward to NT 3.51's improved PCMCIA card support, particularly for clients deploying NT on laptops.

More to come

Also important to users is the debut of Visual FoxPro, a version of the FoxPro desktop database system that adds visual programming capabilities similar to those in Visual Basic.

"Visual FoxPro is important [to us] because we have a lot of Clipper code. [But] it's not as important as SQL Server 6.0," Tisi said. "An update of NT is good because it just becomes more stable."

Other products that Microsoft officials have promised to release around midyear include the following:

- SNA Server 2.11, a minor update that also provides support for PowerPC machines running NT 3.51.
- A minor update to the Systems Management Server that adds support for Windows 95 clients and works with SQL Server 6.0.
- Microsoft Mail Server 3.5,

which will finally provide a version of the Mail Server that runs natively under Windows NT.

However, users are not waiting with bated breath for Mail Server 3.5. Instead, they say they are looking for Mail Server's successor, Exchange Server, which is late and now due out by the end of the year.

A Microsoft official said NT 3.51 and updates to NT-based server products are all basically on schedule.

"We're getting awfully, awfully close [to shipping NT 3.51], and the other products are gated by NT," said Collins Hemingway, Microsoft's director of industry marketing at the Business Systems Division.

Because final testing of the server product updates must wait until NT Server 3.51 is completed, one or two products might miss the end of June by "a couple of days or a couple of weeks," Hemingway said.

Integrated "works" packages have some good points. See page 119.

PowerPC players set to make big product splash

By Lisa Picarille

While Apple Computer, Inc. and the IBM PC Co. plan to introduce new PowerPC products on June 19, users will likely find the offerings disappointing, given the lack of native application software for the platforms.

The two companies will unveil their respective and competing PowerPC products in separate announcements in New York, but sources close to both companies expect a unified message: RISC PowerPC is the microprocessor of the future. Lingering software issues, however, may continue to cause problems for users seeking to move to the PowerPC now.

Although IBM still has a significant strategic investment in the Intel Corp. architecture, it is expected to unveil its first PowerPC-based systems, including two PCs and two laptops. IBM is also expected to field a 133-MHz, 604-based RS/6000 high-end graphical workstation at the announcement, sources said.

Slow out of the gate

However, IBM's initial PowerPC introduction is long overdue. IBM was slated to ship its PowerPC systems more than a year ago but delayed delivery because of the lack of basic applications for OS/2 and Microsoft Corp.'s Windows NT. A dearth of application software for those platforms still exists and may continue

to stifle PowerPC product demand.

Sources close to the PC Co. said IBM was attempting to finish the PowerPC version of OS/2 to ship with the new systems. OS/2 for the PowerPC is now in beta testing and is not expected to be finalized until September. IBM's PowerSeries will initially run Windows NT and AIX. Sun Microsystems, Inc. is porting Solaris 2.5 to the PowerPC.

Apple plans to announce two 604-based high-end desktops aimed at digital video and prepress users, said sources close to both companies.

Since launching the jointly developed PowerPC initiative more than three years ago, Apple has delivered several PowerPC-based Power Macintosh systems and plans to follow the upcoming announcement with a summer rollout of

three 601 Power Macintoshes, a 604 Power Macintosh and PowerBooks based on the 603E chip [CW, March 27], according to sources briefed on Apple's plans.

Both IBM and Apple declined to comment.

Heating up

To further fuel the PowerPC fire, Zenith Data Systems will use the PC Expo trade show in New York to demonstrate four new PowerPC-based machines that run AIX and Windows NT, a 604 multiprocessor server, a 604 uniprocessor server, a 604 high-end desktop and a 603E desktop system, sources close to the company said.

And IPC Technologies, Inc. in Austin, Texas, is expected to unveil three Austin PowerPlay systems that will initially run

only Windows NT. One system boasts a 604 dual processor, another has a faster 604 processor, and the third is a 603E notebook, sources said.

In the meantime, a handful of companies have been doing their bit to attract attention to the PowerPC. Tatung Science and Technology, Inc., FirePower Systems, Inc. and Motorola, Inc. have already introduced PowerPC systems. Last month, Power Computing Corp. delivered the first Power Macintosh clone.

A total of 2.5 million PowerPC chips are expected to ship this year, more than twice the 1.1 million that

shipped last year, according to In-Stat Research, Inc. in Scottsdale, Ariz.

While users are excited by the promise of increased power offered by the PowerPC, some are awaiting CHRP, the Common Hardware Reference Platform that is being codeveloped by IBM and Apple. But CHRP, which is expected to give users a single machine to run their choice of seven operating systems—including OS/2, Windows NT, Windows 95, AIX, Mac OS and Solaris—is not due out until the end of next year, according to Apple officials.

Senior writer Jaikumar Vijayan and senior editor Jean S. Bozman contributed to the story.

IBM eases DOS to OS/2 port. See page 45.

PC Expo to pack PowerPC punch

IBM's systems will initially run Windows NT and AIX operating systems. Users of those machines have the option of receiving a preloaded beta version of OS/2 for the PowerPC.

	Processor	RAM	Hard drive	Slots	Unique features	Price
IBM POWER SERIES 800 DESKTOP SYSTEMS	100-MHz 601 or 120-MHz 604	16M bytes	540M bytes	3 PCI (100-MHz 601); 5 PCI, 2 PCMCIA (120-MHz 604)	Dual-speed CD-ROM drive, built-in speakers and micro- phone (100-MHz 601)	\$3,000 (100-MHz 601); \$4,500 (120-MHz 604)
IBM THINKPAD POWER SERIES NOTEBOOKS	66-MHz 603E or 100-MHz 603E	16M bytes	540M bytes	2 PCMCIA	7.9 pounds, dual- speed CD-ROM drive, built-in microphone (66-MHz 603E)	\$5,500 to \$7,500
Apple Computer POWER MACINTOSH 9500 SERIES (code-named Tsunami)	120-MHz 604 or 133-MHz 604	16M bytes expandable to 768M bytes	500M bytes	6 PCI	Quadruple-speed CD- ROM drive, internal fast SCSI interface	\$4,000 (120-MHz 604); \$4,600 (132-MHz 604)



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Telecom overhaul hits roadblock in Congress

By Gary H. Anthes
WASHINGTON

■ An industry coalition promoting network interoperability was dealt a serious blow recently when provisions it favored were eliminated from draft legislation designed to overhaul telecommunications regulation.

The group supported language in the House of Representative's version of the Communications Act of 1995 that would have required the Federal Communications Commission to establish procedures to ensure "effective and efficient interconnection and interoperability of public and private networks." The bill also provided for FCC oversight of development of interoperability and connectivity standards.

Coalition members include industry heavyweights such as Sun Microsystems, Inc., AT&T Corp. and Oracle Corp.

But a rival group, which includes Microsoft Corp., IBM and Novell, Inc., protested that interoperability was a red herring disguised as a way for competitors to steal their technology. They worry that the FCC might, in the interest of "interoperability," mandate standards that would effectively force the divestiture of their proprietary technology for free or for license fees set by the government.

They also said the last thing the computer industry needs is meddling by the FCC.

Less is more

Rep. Rick White, a Republican from the Washington state district where Microsoft is based, persuaded the Commerce Committee to remove both the interoperability language and the mandate for new FCC oversight of standards development. "We already have too many federal bureaucracies and do not need to add a 'Federal Computer Commission' to the list," he said in a statement.

The bill as it is written now does not mention interoperability and says the FCC may work with standards-setting bodies in a way "consistent with prior practice." More broadly, the bill would scrap most cable television price regulation and remove

barriers to competition in local and long-distance telephone and cable markets.

The revised bill was approved by the committee and is expected to be passed by the House this summer. A companion bill in the Senate, which has no provisions for interoperability or expanded FCC oversight, could be voted on in the next two weeks.

These changes will not sit well with suppliers such as Rick Dahlgren, a vice president at Cottonwood Communications in Omaha, who said the government should work harder to ensure open networks and interoperability. He said Cottonwood wants to offer various digital video services to home users, but it has been thwarted by US West, Inc.,



U.S. Rep. Rick White (R-Wash.) supported Microsoft's position to change legislation

which said the interface specifications to the "set-top box" — a computer — that is needed to process the signals is proprietary.

As a result, users of Cottonwood services would have to buy an additional box for more than \$1,000, Dahlgren said. "This flies in the face of everything

that has to do with common carriage, such as the requirement for nondiscriminatory access," he added.

Dahlgren said an antitrust suit against US West is grinding through the legal process, but he wryly predicted that "we'll be successful posthumously."

The Computer and Communications Industry Association (CCIA) in Washington continues to support the stricken interoperability provisions. "We are on [Capitol] Hill trying to induce changes in the legislation in both chambers," said Marc Brailov, a policy analyst.

Brailov said although the CCIA believes the government should play a role in ensuring interoperability, it should leave development of standards to industry.

When asked what the FCC should do, Brailov said, "We are mulling that over. We want to see what is politically feasible."

This year the answer may be "not much." Last week, the Washington think tank Progress & Freedom Foundation, which has close ties to House Speaker Newt Gingrich (R-Ga.), proposed that the FCC be abolished.

News Shorts

Kodak ends Digital deal, signs new outsourcing pacts

Eastman Kodak Co. signed separate five-year outsourcing agreements with IBM's Integrated Systems Solutions Corp. and Northern Telecom, Inc. to manage its corporate networks. Kodak's contract with Digital Equipment Corp., which had managed the company's data and video networks since 1989, was not renewed. Under terms of the new deals signed last week, ISSC will manage Kodak's data networks, and Northern Telecom will take over all voice and video communications in the U.S., including Kodak's internal television network and videoconferencing facilities.

Convex upgrades supercomputer

Convex Computer Corp. today is scheduled to unveil an upgrade to its scalable supercomputer based on Hewlett-Packard Co.'s PA-RISC 7200 processor. The SPP1200, a parallel processing system that scales up to 128 processors, runs about 35% faster than the current SPP1000, company officials said. Richardson, Texas-based Convex and Palo Alto, Calif.-based HP will sell the system, which ranges from \$160,000 for a two-CPU system to \$8 million for a full-blown 128-processor model.



3Com expands switch

This week, 3Com Corp. in Santa Clara, Calif., will introduce two new modules for its LANplex 6000 high-end switch designed for use in data centers. 3Com's Ethernet/Fiber Distributed Data Interface (FDDI) Switching Module and Token Ring Switching Module feature next-generation application specific integrated circuit technology designed to increase the switch's versatility. The Ethernet/FDDI module, priced at \$18,000 for 18 ports, is shipping now. The Token Ring module will cost \$13,500 and ship in September.

EDS woos rival A. T. Kearney

Electronic Data Systems Corp. last week revised its original bid to acquire consulting rival A. T. Kearney, Inc., which rejected an EDS offer last month. In a joint statement issued last week, the companies said that if the offer — reportedly valued at about \$600 million — is accepted, "it is expected that EDS's management consulting business would merge with Kearney to create an EDS-owned management consulting subsidiary." Chicago-based A. T. Kearney employs 1,900 consultants worldwide.



Trio teams up for on-line banking

Three regional banks have joined forces to create the first full-service, Internet-accessible retail bank. The partners, Wachovia Corp. in Winston-Salem, N.C., Huntington Bancshares in Columbus, Ohio, and Area Bancshares Corp. in Owensboro, Ky., have agreed in principle to create a unit called Security First Network Bank (<http://www.sfnb.com>). Last month, Wells Fargo Bank in San Francisco became the first retail bank to provide customers with on-line access to checking, savings, line-of-credit and credit-card accounts.

Repetitive injury concerns mount

What do professional worriers worry about? A survey of more than 2,000 corporate risk

managers found that repetitive stress injuries suffered by computer keyboard users and factory workers ranked No. 4 on their list of concerns. The survey, conducted by New York consultancy Alexander & Alexander Services, Inc., ranked tort reform and spiraling health care costs as the highest priorities.

SGI goes Hollywood

Silicon Graphics, Inc. and DreamWorks SKG, the Los Angeles movie studio spearheaded by Steven Spielberg, last week announced plans to jointly develop computer animation systems based on SGI technology. The companies plan to spend roughly \$50 million to create a studio system that can develop, manage and store high-end computer animation graphics for use in movies and videos. The system, Digital Animation Dreammachine, or DAD, is scheduled for a September 1996 premiere.



Beefing up notebook storage

Integral Peripherals in Boulder, Colo., has introduced 720M-byte and 1G-byte quarter-inch disk drives for high-end notebook computers. The drives were designed to suit the growing storage capacity needs of mobile computer users. OEM single-quantity evaluation units are available now at \$595 for the Platinum/720 and \$795 for the Platinum/1010.

Chip doing double duty

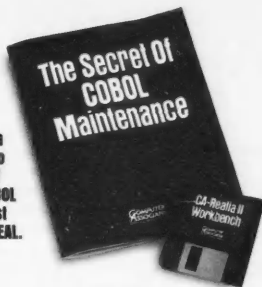
Chip maker Advanced Micro Devices, Inc. this week will announce a 120-MHz 486 chip that it claims will deliver the same performance as a 75-MHz Pentium chip. The chip is aimed at the desktop and portable markets. Shipments will begin in the third quarter.

UPS delivers in Europe

United Parcel Service of America, Inc. plans to inject more than \$1 billion into its European operations over the next five years in an effort to strengthen its regional activities there. The plan includes a \$200 million investment in information technologies.

SHORT TAKES IBM has purchased Footprint Software, Inc., which specializes in financial applications for banks. Footprint in Toronto employs 230 people and had \$25 million in revenue last year. ... Barclays Bank in London, Netscape Communications Corp. and Sybase, Inc. are developing a secure credit-card transaction environment for Barclays' on-line mall, which is located at <http://www.itl.net/barclaysquare>. ... When the top leaders of the industrial world meet June 15-17 in Halifax, Nova Scotia, to engage in high-level economic and trade discussions, they will use Fujitsu Personal Systems, Inc. pen-based tablet computers.

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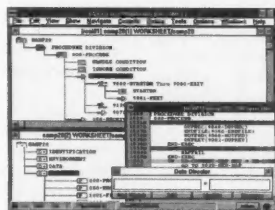


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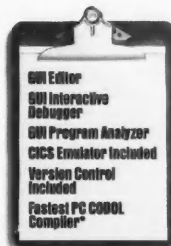
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DCE software delays disappoint users

By Craig Stedman
BOSTON

Most of the key features planned for an upcoming version of the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) software have been delayed from this fall to mid-1996,

and some expected enhancements have fallen by the wayside altogether.

That was the unhappy news delivered to corporate users at the OSF's annual members meeting here last week. While a subset of DCE 1.2 will still be available to systems vendors in November, the most eagerly awaited features, such as

coexistence with Novell, Inc.'s NetWare, will now ship in a second release due in mid-1996 (see box).

DCE is a set of middleware for distributing applications across multiple platforms, from PCs to mainframes. The technology is viewed as one of the leading options for connecting departmental

islands into a seamless computing environment, although it has been adopted more slowly than proponents had hoped.

Early users who attended the OSF members meeting said they remain bullish about DCE. But they added that the phased release schedule means systems vendors will probably not be able to offer the full DCE 1.2 to customers until late next year.

"It would be nice to have it there sooner," said Paul Frisch, a systems engineer at Electronic Data Systems Corp.'s client/server technology services unit in Troy, Mich. EDS is implementing DCE at parent company General Motors Corp., and getting NetWare support would eliminate the need to have TCP/IP protocol stacks on GM's PCs to connect them to Unix systems, he said.

The phased approach is "a disappointment in that we need as much DCE as we can get as fast as we can get it," said J. Steven Jenkins, information systems task manager at NASA's Jet Propulsion Laboratory in Pasadena, Calif. The lab, a heavy NetWare user, plans next year to put core DCE services in place that it hopes individual LANs could access, he added.

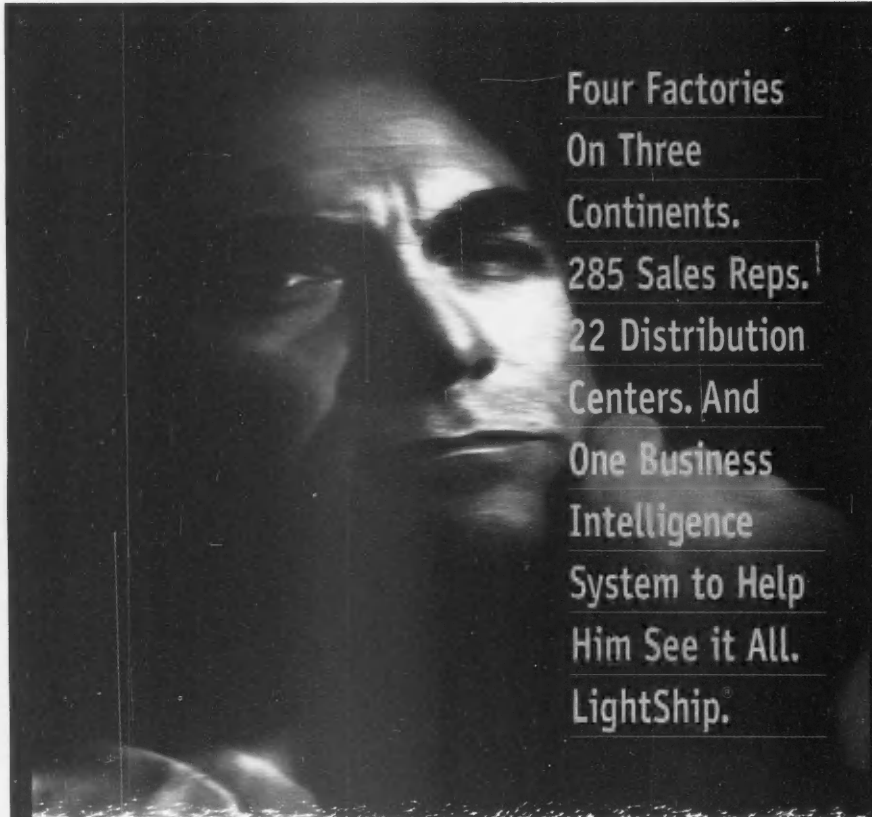
The delay was caused by protracted haggling over joint development contracts between project leader IBM and other participating vendors, sources said. Development plans were supposed to be finalized last fall, but the contracts did not get signed until April, the sources added. DCE 1.2 is the first release controlled by a group of vendors instead of OSF staff.

In addition, sources said an agent for linking DCE with management tools based on the industry-standard Simple Network Management Protocol (SNMP) was left out of the final DCE 1.2 plan. SNMP support, which is required to enable nearly all network management software to query the status of DCE systems, is now targeted for a future version, the sources said.

The management capabilities an SNMP agent would provide for DCE are badly needed after the collapse of the OSF's effort to develop a companion Distributed Management Environment, said Michael McGlynn, a technical staff member at Mitre Corp.'s software engineering center in Eatontown, N.J.

What and when

The initial DCE 1.2.1 release, due to ship to systems vendors in November, will include a Network File System gateway and C++ language support, OSF officials said. The follow-on DCE 1.2.2 should be ready next June and will add file access and administrative support for NetWare clients. It will also include compatibility with public key encryption mechanisms and a single-threaded version of the DCE remote procedure call technology.



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Lannet offers virtual network management

Users get simultaneous monitoring

By Michael Fitzgerald

LANs, like reality and corporations, are going virtual. But the big question is, how will they be managed?

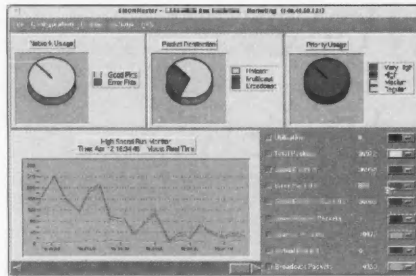
Israeli firm Lannet Data Communications Ltd. is among a pack of vendors fighting for the No. 3 slot in the worldwide switching hub market behind Cisco Systems, Inc.'s Kalpana unit and 3Com Corp. Today Lannet will announce a combined software/hardware product that lets users implement Remote Monitoring (Rmon) for virtual switched networks.

Firms are able to put users on these networks without physically moving wires and cables around. Virtual networks are expected to become increasingly important to large companies with distributed workforces.

A leg up

Lannet's SMonMaster software and NMA-RS network management module, both shipping this month, were designed to give users full network management capabilities for all ports on a switched virtual network. Analysts said these features will gain Lannet at least some edge in the market because of their ability to simultaneously monitor all traffic on a virtual LAN.

"This could open eyes at other vendors or could let Lannet be accepted as a major player for the first time,"



Lannet's SMonMaster features graphical tracking of bad packet ratios, packet destinations and usage types

said Skip MacAskill, an analyst at Gartner Group, Inc. in Burlington, Mass.

MacAskill said for virtual LANs to function efficiently, the network manager must have a way to troubleshoot and provide some basic management, such as traffic patterns and error-generating information. He said Lannet would be "the first to pull this off, provided that they actually deliver it."

MacAskill said other switching hub makers with Rmon capabilities, such as Alantec Corp. or 3Com, can provide only time snapshots of network traffic, while

Lannet will give real-time monitoring.

One user said Lannet's software will let his company move to switched virtual LANs.

"For us, if something goes wrong in a switched network, especially since we're going to start using virtual nets, I can't communicate anymore," said Joe Andres, network manager for the control centers network at Bonneville Power Administration in Vancouver, Wash. Bonneville Power has two networks 300 miles apart and has considered switching before, but the utility was unable to get the level of management capabilities it considered crucial to keeping the network running.

The utility has roughly 15 Lannet switches, installed five years ago, that support the NMA-RS cards. Andres said that although he uses Lannet's proprietary modules and will have to use 100Base-T wiring, he does not consider it a major drawback.

The SMonMaster software will cost \$3,995. The NMA-RS module, based on an Intel Corp. 1960 RISC processor, will sell for \$7,995. The hardware works only with Lannet's switching hubs but modularly plugs into them.

While Lannet looks to have an early lead in managing switched virtual networks, it has little presence in the U.S. "Their story sounds great; the only negative is ... they're nowhere in the U.S.," said Paul Weinstein, a first vice president at PaineWebber, Inc. in New York.

DG on thin ice

CONTINUED FROM COVER 1

DG may be close to making a major strategic announcement that will address these concerns, but so far, the Westboro, Mass., company has remained mum.

"The user group is going client/server," said David Novy, product data management specialist at 3M Co. in St. Paul, Minn. "DG isn't going with them." He added that DG faces "a slow death by strangulation" unless it does something dramatic.

"They've got the finest piece of iron on the market, but the applications aren't there," Novy added.

Novy rattled off a list of software, including data management, computer-aided design and even the popular Notes packages, that does not run on DG's Avion boxes. He also complained that DG is weak when it comes to client/server applications.

Like many users, Novy said he is waiting to see what DG plans to do in terms of settling on a new chip. "They're running out of life on the 88K; nobody writes for it," he said.

Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass., agreed. He said DG has "ridden the 88K as far as they can" and has to choose essentially between Intel Corp.'s Pentium, Hewlett-Packard Co.'s PA-RISC or the PowerPC chip.

What about software?

"We're all curious," said Tim Boyer, data processing manager at Denmon Tire Corp. in Cleveland and a past NADGUG president. He too wants DG to address the ongoing concern about software availability.

But not everyone can wait. Michael Crowell, information technology manager for the city of Salisbury, N.C., once had three DG MV computers and four Avions. All are gone except for one

MV, which will be shipped out next week, Crowell said.

When software developers stopped writing for the proprietary MV line, Crowell said he began exploring new options. He found that moving to a PC-based network reduced costs and improved access to applications.

"The machines never gave us a problem," Crowell said. "It was getting software to run on them."

Jerry Waldon, systems manager at Pictorial, Inc. in Indianapolis, is a 12-year DG customer.

A DG's life	
1989	Data General unveils servers and workstations based on Motorola 88000 RISC processor
1991	Data General stands alone as major hardware players shun the 88000
1993	Data General announces second-generation servers based on Motorola 88100 chip
1994	Motorola ships PowerPC
1994 to present	Anxious Data General users press company for chip direction

He said he wants DG to improve integration between the Unix implementation and Microsoft Corp.'s Windows NT.

Furthermore, Waldon said he wants to hear how DG plans to lure software makers to port their products to DG/UX. He pointed to Notes as an example. "Those are the products the world is standardizing on. We need to know are we going to be able to run them on the DG platform," he said.

Steve Pounds, controller at Security Forces, Inc. in Charlotte, N.C., and NADGUG president, said a meeting—the first of its kind outside of the annual user group session—is being arranged between user group members and DG executives.

Notes delay no biggie

By Suruchi Mohan

Unlike Microsoft Corp. Mail administrators, who are having a hard time keeping their systems up and running while they wait for Exchange, Notes 3.0 users are waiting patiently for the delayed Version 4.0.

Despite a promised June delivery, Lotus Development Corp.'s Notes 4 will not be available until year's end, a source said. In April, Lotus moved the shipment date to the second half of the year.

Additionally, Lotus revised the ship date for NotesView, the management tool based on Hewlett-Packard Co.'s OpenView platform, from the end of the first quarter to the last week in June.

The delays are not significant, according to a Lotus spokeswoman. "There is no specific reason for the changes; it is just the nature of software," she said.

Not much change

Unfazed users appear to be taking the six-month delay in stride. The reason is that although Notes 4.0 offers some interesting features, it is essentially the same as the current product, according to Bob Barmack, director of operations at Young & Rubicam, Inc. in New York.

The same is true for NotesView. Although it is a new product, it offers features that are already available from third parties, he said. NotesView will offer central


administration capabilities, and Notes sites are using third-party utilities right now. Even though the utilities are "not as good as NotesView, [they] help us get by," Barmack said.


But with Microsoft's Exchange, Mail users face a brand-new product with new capabilities.

"We are interested in the features of Notes Version 4.0, but there's nothing there we're living and dying on," Barmack said. "Some of the features, like [Comm-Server], would take some time to examine anyway."

Walter Kuleck, managing director at Technology Enterprises, Inc., a consultancy in Cleveland, agreed. "People committed to Notes are religious in their fervor," he said, adding that a six-month delay will not alter those people's plans, nor will it make them switch platforms.

"We will be migrating to Version 4, but at this time, if it's delayed 'til the end of the year, it [won't] adversely affect us," said Kevin O'Brien, director of the information and technology center group at Price Waterhouse in Tampa, Fla. "We're obviously anxious to make use of the features of Version 4, but with our 35,000-plus users worldwide, we have to take a cautious approach," he said, noting that a lot of interoperability testing is required before rollout.

 **Novell promises** a client/server groupware package. See page 49.



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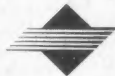
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Netscape offers one-stop Internet sign-up

Commercial edition will lure Internet neophytes

By Ellis Bookner

The wildly popular Navigator browser, once available only to the Internet-initiated, will soon appear on retail shelves near you.

The \$39.95 Netscape Navigator Personal Edition for Windows will include a one-button feature that will enable new users to choose among several national Internet access providers, set up an account and immediately begin exploring the Internet.

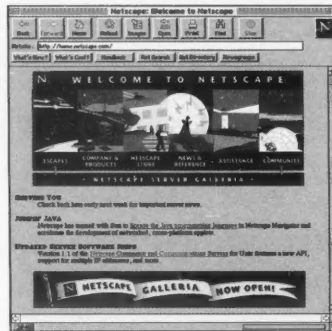
"It delivers the dynamic world of the Internet to anyone with a PC and a modem," said Marc Andreessen, co-founder and vice president of technology at Netscape Communications Corp. in Mountain View, Calif. The Personal Edition will be available from Netscape, computer retail chains, resellers and OEM channels.

When Netscape burst onto the Internet with a downloadable browser for the World-Wide Web last October, many wondered how the start-up could stay in busi-

ness with a "free" product. Today, Navigator is the runaway favorite among Web surfers, accounting for more than 75% of browser traffic on the Internet. Meanwhile, privately held Netscape claims a healthy business in licensed sales of its browser and server products.

"The wisdom of what they did is reflected in their dominant market share," said Jeffrey Tarter, publisher of "Soft Letter," a newsletter in Watertown, Mass. He said that while Netscape spent virtually nothing on advertising, it swiftly obtained market dominance over the likes of IBM, which heavily promoted Internet access features in its OS/2 Warp product.

But Amy Wohl, editor of "Trends-Letter" in Narberth, Pa., said Netscape and other vendors of Internet access software will soon confront Internet connectivity included in operating systems



New retail products may bring many more users to Netscape's home page

and popular applications.

When this happens, Wohl predicts, the browser market will consolidate. "We don't need 300 mediocre ones; we need three good ones," she said. Netscape's pursuit of both direct sales and OEM channels bodes well for it, Wohl added.

Netscape is also adding unique capabilities to its stand-alone product, such as a multimedia player from Macromedia, Inc. (see story at right).

Pick one

The Personal Edition includes one-button access and sign-up with the UUNet, Portal, Netcom and MCI Communications Corp. service providers. Netscape is also negotiating with several other Internet access providers.

Financial arrangements between Netscape and the providers were not revealed, but a Netscape source confirmed that those vendors are paying Netscape a "bounty" for new subscribers. The software includes 90 days of technical support from Netscape and ongoing support for the product from the service provider.

Also last week, Netscape added an online distribution scheme for its popular Web servers.

The Server Test Drive Program lets potential customers download and use the just-released 1.1 Communications and Commerce server products for a 60-day trial.

Customers will have to fill out an online registration form, and Netscape said it intends to send "soft" reminders to downloaders who do not pay for the servers within the 60-day trial period. Unix servers cost between \$1,495 and \$5,000, and Windows NT servers cost \$795 to \$2,995.

Multimedia views

Macromedia will announce this week that it is supplying an integrated multimedia player in the next release of Netscape's Navigator World-Wide Web browser. The integrated player, code-named Shockwave, will permit on-the-fly viewing of multimedia titles through Navigator.

The player software will also be available with every copy of Director, according to a spokesman for San Francisco-based Macromedia. In addition to the Netscape browser, the Director playback engine supports PCs (Windows, Macintosh and OS/2 Warp) and emerging interactive television platforms.

Separately, Macromedia said it would launch a Web site that will offer mostly non-Macromedia information. "We want to be a real service to multimedia developers," said Miles Walsh, vice president of marketing. He said the site would include news and feature how-to articles for multimedia developers from a number of sources. It can be accessed at <http://www.macromedia.com>. —Ellis Bookner

Netscape nuances

Netscape, America Online, CompuServe, Prodigy and IBM partner with Terisa Systems to combine Secure Socket Layer and Secure Hypertext Transport Protocol security protocols.

Navigator 1.1 beta released on the Internet.

1995

New World-Wide Web servers and high-end applications announced.

Netscape and Sun Microsystems sign product distribution and technology exchange pact.

Netscape unveils first retail product, Navigator Personal Edition for Windows. The shrink-wrapped package is aimed at Internet neophytes and includes one-button sign-up with several Internet access providers.

Netscape and Verity team to bring intelligent agent technology to the Internet.

Netscape puts server software on the Internet for free evaluation.

Netscape licenses Sun's Java, a 3-D multimedia programming language.

Internet phone device unlikely threat to telcos

By Suruchi Mohan

VocalTec, Inc. in Northvale, N.J., this week will announce the fully duplexed version of its Internet Phone, a device that lets PC users communicate orally over the Internet for the price of a local telephone call. But it may encounter some static in its effort to build a market.

Tom Maresca, an analyst at Jupiter Communications Ltd. in New York, said many people are wondering if the product will pose a threat to telecommunications companies. But there is no danger of that, he said, because Internet Phone is "still for the Internet hobbyist." Latency—the delay in receiving the transmission—is still a hindrance and does not make for smooth conversations.

Critics are already complaining that

the product misses the mark by too closely mirroring speakerphones and their problems. Jack Gold, an analyst at Meta Group, Inc. in Stamford, Conn., said Internet Phone lacks several features that would make it suitable for business use, such as multipoint conferencing and information sharing.

Speakerphone-quality

"In a business setting, people won't get on the Internet to talk" orally, Gold said. He added that Internet Phone is not exactly fully duplexed, which would allow for simultaneous transmission of data in both directions.

He equated it to a speakerphone, which does not handle people interrupting one another well and has a delay between the time one person stops talking

and the other person hears the voice.

Another factor limiting the business use of VocalTec's latest version is that users have to be logged on at the same time to reach one another, Gold said. But it is good for those in the business of providing Internet services, Maresca said. For example, as people get more involved with the World-Wide Web, a service/support firm could use it to let users call in with problems while browsing.

Gold predicted that Internet Phone will find its way to many PCs because NetCom, an Internet services provider, is distributing it with its NetCruiser tool.

Linux turns into a World-Wide Web surfer. See page 68.

AOL acquisition

In a surprise move late last week, American Online, Inc. acquired Global Network Navigator, one of the most established Internet locales, for \$11 million. Many expected AOL to add Internet access the way CompuServe, Inc. and Prodigy Services Co. have. Prodigy delivered a Web browser capability early this year, and CompuServe followed with a Web browser from Spry, Inc., which it acquired earlier this year for \$100 million. By picking up Global Network Navigator, AOL can claim 180,000 registered subscribers.

—Ellis Bookner

FCC inks ISDN price-cut plan

By Michael Fitzgerald

Winning rare praise for prompt action, the Federal Communications Commission last week released a proposal intended to push down pricing on Integrated Services Digital Network (ISDN).

The FCC also said it will not enforce its recent decision that ISDN vendors must charge a per-channel rate for services. "This decision [not to enforce the rate ruling] was amazing in its rapidity," said Jim Burger, director of government affairs at Apple Computer, Inc. The FCC issued its ruling on per-channel rates for ISDN just two months ago.

The FCC's rule-making proposal, rather than dictating to the industry, is meant to solicit comments from the industry and consumers about the best ways to lower ISDN rates.

Possible FCC rules

- ▶ One line charge per ISDN line, instead of multiple charges
- ▶ Rate line costs based on a ratio that compares to local lines or T1 lines (depending on the ISDN service)
- ▶ Flexible rates if long-distance charges don't rise

Kathleen M. H. Wallman, chief of the FCC's Common Carrier Bureau, stressed that both business and residential consumers should benefit from lower-priced, easier-to-get ISDN services.

The computer industry rallied behind the FCC's efforts, saying that ISDN could spur multimedia use. "We're quite heartened, and we think the industry ought to get together so that 10 to 20 times the number of ISDN lines installed last year get installed," said Mike Maibach, director of government affairs at Intel Corp.

ISDN is potentially important to users as well as vendors because it allows telephone lines to carry substantially more information than regular analog phone lines. ISDN can carry data at 128K bit/sec., while standard phone lines now are only beginning to achieve 28.8K bit/sec. rates.

Room for improvement

Long touted as a way for companies to gain much higher throughput rates without completely revamping their networks, ISDN has yet to fulfill its potential. The digital network has a less than 70% penetration rate at the telephone switch level. Besides pricing that varies from state to state, users have also had to endure varying levels of ISDN proficiency at telephone companies.

Because the FCC does not control ISDN pricing at the state level, its direct impact on pricing is limited [CW, May 15]. Its influence is significant, however.

Some users are considering ISDN even

at current prices.

Buck Guery, a computer technician at the College of Charleston in Charleston, S.C., said the college is looking to install ISDN lines between its campuses to gain more effective terminal access for off-site users.

"For individual use or home use the

costs are way too high, but for us it's not bad," Guery said. Rates in South Carolina include a \$250 installation fee and a basic rate of \$90 a month. These rates appear to be more cost-effective than leased 56K bit/sec. lines or T1 lines, Guery said.

The FCC also wants telephone compa-

Imagine trying to predict the impact of PC application software in 1975. It would have been nearly impossible to foresee the full power of word processing and spreadsheet programs that are now so ingrained in contemporary work culture.

Twenty years later, we are on the threshold of another revolution in computing technology. It's called "Groupware."

Until recently, computer technology has mainly served to automate transaction-based, back-office applications or to improve personal productivity. Tools to manage the rich variety of document-oriented information — which is the lifeblood of most business processes — simply didn't exist. The limitations of technology stifled teamwork rather than encouraging it. Groupware resolves these dilemmas.

So, what is groupware? Groupware is software that uniquely enables organizations to communicate, to collaborate, and to coordinate key business processes. Groupware encompasses electronic mail, but goes far beyond messaging to act as an integrated platform for the development and deployment of a new class of client/server applications — applications that structure the flow of both structured and unstructured information in business relationships — among teams, across an enterprise, and between companies.

Groupware is so compelling because it allows businesses to create an organizational memory and share knowledge and expertise across time zones, geographies, and networks. It draws together the collective intelligence found in unstructured information sources like word processing documents, electronic mail messages, and

faxes. Companies using groupware find that the barriers to high-performance teamwork that have plagued them fall away. According to International Data Corporation, groupware signals the second wave in desktop computing.¹

At the same time, this emerging software category has become a source of confusion. Technology buyers sometimes mistake a component of

presentations, faxes, scanned images and video clips.

An integrated messaging system.

Groupware users must be able to take advantage of a messaging infrastructure to send and receive electronic mail and move documents through a workflow process.

A rich application development environment.

Developers must be able to rapidly build portable and scalable strategic applications which span document-oriented and structured database information.

Applications designed with these components can deliver mission-critical, enterprise-wide results like slashing product development cycles, enhancing relationships with customers, and automating a sales organization for greater productivity.

Only one groupware product provides all of these capabilities. Lotus® Notes.

Lotus invented groupware. We have invested 10 years of research and development and have six years of experience in this market. More than 1½ million users in 5,500 companies are reaping the benefits of Notes, and over 9,000 Notes business partners are helping customers develop winning applications. Notes customers have achieved an average R.O.I. of 179%.²

In the coming months, we will use this forum to explore the issues around groupware. Our goal is to ensure that you make successful investments in this important product category.

Lotus
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1. Lotus Notes: Agent of Change; International Data Corporation, 1994. 2. Ibid.

Internet tramples legal jurisdictions

CONTINUED FROM COVER 1

dated laws. It is also making it tough for users and authorities to figure out which jurisdiction's laws apply.

Corporate information systems departments can try to shield their companies from liability by writing Internet usage policies that forbid defamatory statements. They can also take more aggressive action by shutting off access to nonbusiness portions of the Internet, said Charles L. Johnson, information systems security architect at Cummins Engine Co. in Columbus, Ind.

Across the board

But Johnson noted that keeping up with the various laws is a major headache. "For starters, I'd like to see uniformity

[of computer abuse statutes] among the 50 states and our neighbors north and south of the U.S. border," he said.

Gambling laws, for example, were not drafted with the borderless, global Internet in mind. Nor did their authors contemplate the emergence of electronic cash, which can be sent anywhere in the world instantly and anonymously. Law enforcement officials say it is unclear how

the law applies to offshore, Internet-based casinos. Enforcement, they acknowledge, would be difficult in any case.

Yet last month, the Texas attorney general said any Texan who bets electronically on a "publicly accessible" online service is breaking state gambling laws.

"How do you preserve boundaries when you've got a technology that transcends them all?" asked Barry Weiss, a partner at the computer law firm Gordon & Glickson in Chicago.

A scathing on-line message that may be protected in the U.S. under the Constitution's First Amendment, for instance, could be considered libelous in the UK, Canada or Australia, which are less permissive about free speech.

"With libel, the harm occurs where the message is read, but on the Internet it could be read anywhere, so the court venue is proper anywhere," said Dan L. Burk, a cyberlaw expert at George Mason University School of Law in Arlington, Va.

The transborder nature of on-line traffic means that an aggrieved party or prosecutor can pick the jurisdiction with the toughest law against a particular

and think you are shielded," Cavazos added. "You might be deemed negligent in not enforcing the policy."

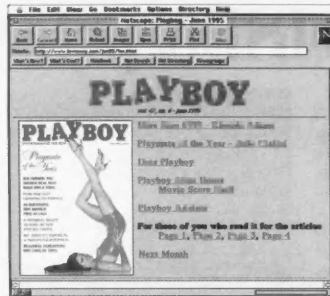
Even worse, companies might be held accountable for the content of World-Wide Web sites to which their sites maintain hypertext links, some legal experts said. "The fact that you directed someone to another site may give the user the idea that you endorse the content at that site," said Peter Harter, executive director and general counsel at National Public Telecomputing Network in Cleveland.

Harter advised companies to carefully watch their Web site "guest books," where users may enter electronic comments so that complaints about content can be handled quickly.

The best approach may be to prevent on-line visitors from leaving material at your site, said Everett Patterson, a general partner at Seattle's Harvard Espresso Co., which unveiled its Web site two weeks ago.

"All material on Harvard Espresso's Web pages [has] been produced by the owners of the company," Patterson said. "We do not allow any other material, and we make no comments about other companies or individuals in our material. Nor will we ever do so."

His rule of thumb: "It is not good busi-



Sexually oriented material—on-line or otherwise—is prohibited in many countries

conduct, a practice known as "forum shopping."

A classic case involved the Milpitas, Calif.-based Amateur Action computer bulletin board, which had explicit scenes of bestiality and sexual fetichism. Last year, after a U.S. postal inspector in Memphis downloaded the images, the owners were convicted of transmitting materials deemed obscene under the Bible Belt community standards in Tennessee. The case is under appeal.

Penthouse magazine's World-Wide Web site illustrates the international dimension. The opening Web page warns visitors to stay away if they are offended by adult sexual material or are "accessing Penthouse Internet from any country or locale where adult material is specifically prohibited by law."

Penthouse then lists 25 countries that outlaw such material, including Egypt, India, Japan, Korea, Mexico, Saudi Arabia, Spain and the UK.

ness practice to make any comments about another individual or company, either good or bad."

Balancing act

A Prodigy spokesman said last week the company will likely appeal the ruling. Prodigy wants to find a middle ground between assuming the mantle of publisher and having an "anything goes" approach to content, he added.

"We feel we should be able to offer an environment where one can't curse and use slurs," said Brian Ek, a spokesman for Prodigy in White Plains, N.Y. Prodigy has never checked posts for accuracy, he said.

In fact, Prodigy has been moving much closer to CompuServe's hands-off model in recent years. This week, for example, Prodigy will offer its subscribers the ability to create their own Web pages. "And we're not going to be screening those," Ek said.

The libel suit against Prodigy was filed by Stratton Oakmont, Inc., a Lake Success, N.Y., investment banking firm. In granting a motion for partial summary judgment last week, Judge Stuart Ains said Prodigy and a volunteer moderator should have removed an anonymous, libelous post against Stratton in Prodigy's Money Talk bulletin board.

Senior editor Mitch Betts contributed to this report.

As for Internet Casinos, Warren Eugene, owner of the Toronto-based company, claimed that he has sidestepped legal problems by licensing casino operations to the governments of the Caribbean islands where the gambling servers will be set up.

For example, the St. Maarten operation will be legally owned by the Netherlands, with the "house" cut going to that country. Eugene will receive a royalty from the Netherlands, he said. Therefore, any legal disputes would be between countries, in this case the U.S. and the Netherlands, Eugene explained.

But it is not really that simple, said Scott Charney, chief of the Computer Crime Unit of the U.S. Department of Justice.

Charney said the Justice Department is looking at how existing laws might relate to Internet-based gambling, but he would not comment on whether the agency plans to prosecute Internet Casinos or U.S.-based customers.

In the long term, the jurisdictional disputes will have to be resolved through updated laws, court decisions and international treaties, Burk said. "There will be a lot of chaos and yelling until then."

& The U.S. is ill-prepared for electronic attacks. See page 55.

Info leaks

Countries may try to erect information barriers to keep out "cultural pollution" and offensive messages, but those obstacles are easily surmounted by information technology.

"Governments inevitably try to fence information out, but the Internet can route the information around the fence," said Dan L. Burk, a cyberlaw expert at George Mason University School of Law in Arlington, Va.

In 1993, a Canadian judge ordered a news blackout on the sensational details of the Karla Homolka murder case. Canadians eventually got the news, however, from U.S. media reports transmitted via fax and the Internet.

In an unusual twist, the U.S. is trying to keep its citizens from getting taxpayer-funded news reports on the Internet. The \$1.4 billion U.S. Information Agency put its Voice of America news dispatches on the Internet last year, but it yanked many of them off the U.S. Internet site and put them on "secret" foreign sites. The move was made in compliance with a 1948 law that prohibits dissemination of government-controlled news broadcasts and propaganda inside the U.S.

—Mitch Betts

Prodigy ruling

CONTINUED FROM COVER 1

nity. Other on-line networks have successfully defended against libel judgments in the past by arguing that they do not make editorial decisions about the content on their networks.

Yet now a number of observers are worried the ruling could have a chilling effect on the businesses that are joining the Internet in droves.

"It'll impact all providers of on-line services, whether they be bulletin boards on commercial services or [commercial businesses] with Internet-based services," said Kent Stuckey, formerly general counsel and now director of product marketing at CompuServe, Inc. in Columbus, Ohio.

To protect themselves, commercial customers that establish a corporate on-line presence or permit employees to cruise the Internet should develop and widely distribute "acceptable use policies" for Internet use, said Edward Cavazos, an attorney who represents Internet access providers for Andrews & Kurth LLP in Houston.

"And you can't just put up these poli-



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Outsourcing taps on-line goldmine

By Ellis Booker

Outsourcing is flourishing on the Internet.

The Computer Museum in Boston recently kicked off its first charity auction in cyberspace with the help of Onsale, a Mountain View, Calif., company with a

service for conducting real-time auctions and markdown sales via the Internet.

And in another corner of the on-line world, a start-up called netvideo recently launched an Internet service for hosting and managing video for corporate customers. The Sunnyvale, Calif., company

described itself as the first Video Service Provider for the Internet community.

As a well-known *New Yorker* cartoon notes: "On the Internet, nobody knows you're a dog." Nor, for that matter, do cyberspace customers know whether your firm's "server" is really sitting in the corporate data center or is maintained by a

third party a thousand miles away.

The unimportance of geographic or organizational distinctions on the Internet is fertile grounds for many kinds of outsourcing, several experts said.

"All our research shows there's a distinction between running a server and running a site," said Richard Villars, director of network architectures research at International

Data Corp. in Framingham, Mass.

In addition to farming out vertical services, there are outsourcing opportunities for authoring and integrating content.

Another model—a more distant relative of outsourcing—is for companies to make their partners responsible for certain pieces of their World-Wide Web presences. "For example, you think you're looking at pictures of furniture at the retailer's site, but in fact, you've accessed the manufacturer's server," Villars said.

A different approach

Stan Lepeak, a senior analyst at Meta Group, Inc. in Stamford, Conn., said traditional outsourcers such as IBM have done mostly soup-to-nuts work for clients getting on the Internet. But in the future, these firms may act more as compilers, pulling together several obscure companies whose services are spliced into the client's Web page. "This will be appealing from the standpoint of the client, who gets one point of contact," he said.

For example, the Computer Museum used a real-time bidding service from Onsale, which opened for general business last week, for its May 22-26 charity auction. Consumers "will turn to the service not only for shopping but as a source of entertainment," predicted Onsale Chief Executive Officer Jerry Kaplan. Onsale can be accessed at <http://www.onsale.com>.

Initially, Onsale will provide one of three interactive formats: standard auctions, Dutch auctions and markdowns. Bidding customers, but not casual browsers, must first register on-line with standard credit verification information.

Each auction page displays the highest bidder's initials, city and state. Customers can also request to be notified via electronic mail when their bids are no longer the highest. Security for the system is based on Netscape Communications Corp. secure servers and Web browsers.

At netvideo, the goal is to provide video transmission and compression from a central site and thus free up bandwidth at the corporate site for other applications, according to company president Hank Magnuski. His first customer is Novell, Inc., which is distributing CEO Bob Frankenberg's address from Comdex/Spring '95. This video can be accessed at <http://corp.novell.com/whatnew/whatnew.htm>.

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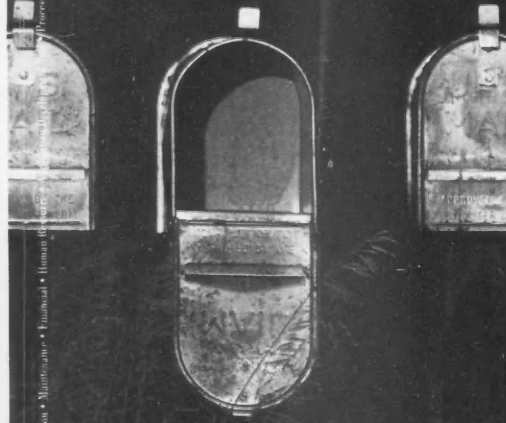
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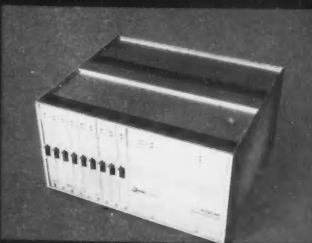
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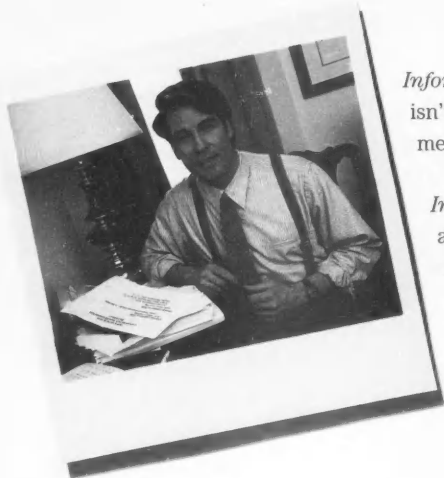
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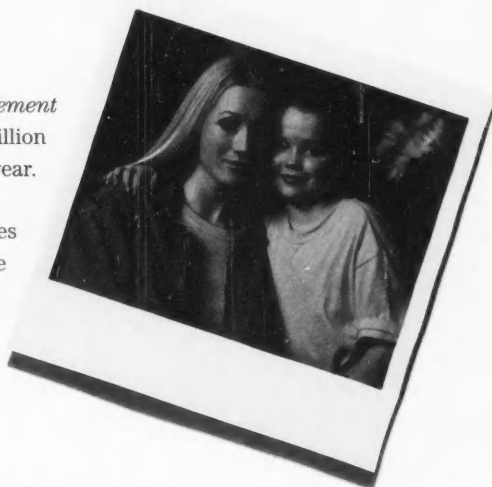


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UNISYS

D&B Software customers dragged into code lawsuit

By Rosemary Cafasso

Six months after Dun & Bradstreet Software and Grace Consulting went public with their squabble over code modifications, the two companies are still locked in a legal dispute.

Now the lawsuit, in which D&B Software claims that Grace went too far in

making changes to its mainframe software, is costing D&B Software friends in its customer base.

Three users contacted recently said D&B Software earlier this year subpoenaed documentation from them concerning their business dealings with Grace Consulting. Based in Upper Montclair, N.J., Grace provides consulting and

maintenance services to 75 D&B Software mainframe customers. The firm has denied D&B Software's allegations.

Long term, the results of the code modification dispute could have disturbing consequences for D&B Software customers. Tweaking mainframe software code is a widespread practice, and if customers have strayed beyond the boundaries

of their contracts with D&B Software, they could run into trouble. D&B Software in Atlanta issued a reminder to customers in late 1994, telling them to double-check their contracts to make sure their modifications were acceptable.

For the short term, some customers are peeved at D&B Software for pulling them into the Grace dispute.

"It has soured it," said Ken Leighton, director of information systems applications at Mitchell International in San Diego, when asked about his company's relationship with D&B Software. "We are still receiving requests from them to upgrade [the company's application software], and frankly we are thinking that there are other things out there that we should probably look at."

Leighton said D&B Software subpoenaed documentation from his company that took three people on his staff a day each to track down and produce. D&B Software requested "all the mods we made to the system, and I've made a lot of mods to the code. It required a lot of work," Leighton said.

D&B Software "indicated that they wouldn't cause us any grief, and it was just the opposite. They wanted printouts that would fill a room, 10 feet by 10 feet."
— IS manager at a retail company

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Going to court

No users have been named as defendants in the lawsuit. But between 15 and 25 Grace customers have been subpoenaed to supply documentation, said James Alberg, a D&B Software senior vice president and general counsel.

He noted that document requests are routine in a lawsuit. He also said the company has worked with customers to "narrow the scope" of the documentation they must provide.

"They indicated that they wouldn't cause us any grief, and it was just the opposite," said one IS manager at a retail company who requested anonymity.

"They wanted printouts that would fill a room, 10 feet by 10 feet," the IS manager said. After lawyers from both sides met, it was finally decided that the retail company could provide D&B Software with code on magnetic tape and "a handful of documents."

Earlier this year, D&B Software stressed it was trying to keep customers out of the lawsuit with Grace. Last week, Alberg said that continues to be the company's position, but certain documentation was required for the lawsuit.

Users such as Bob Malloy, manager of systems development at the Bowman Gray School of Medicine at Wake Forest University in Winston-Salem, N.C., say they consider it a big inconvenience.

"I can't even estimate the cost," Malloy said. "Just the time involved for me and the staff, it was a lot of hours."

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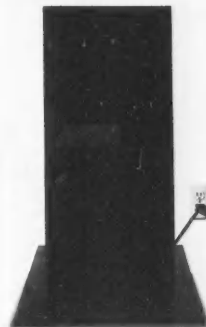
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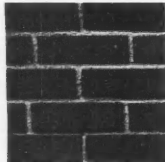
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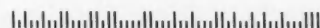
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Microsoft accused of MAPI secrets

Novell, Lotus cite foul play; messaging interface specifications not revealed

By Suruchi Mohan

A battle of the titans is brewing on the messaging standards front, with Novell, Inc. and Lotus Development Corp. both accusing Microsoft Corp. of playing its MAPI cards a little too close to the vest.

MAPI, or Messaging Application Programming Interface, is a set of specifications that developers need to write applications in the Windows environment that are independent of the messaging transport.

Lotus and Novell are accusing Microsoft of not being completely candid about publishing the specs for MAPI 1.0, which will be released with Windows 95 later this year.

Microsoft denies any foul play, but the developers insist that Microsoft is deliberately hiding some extensions to enhance its competitive advantage.

If the issue is not resolved, "what will happen is that Novell, Lotus and Microsoft will do it their own way," said Stewart Nelson, acting general manager of the groupware division at Novell in Orem, Utah. Novell claims that Microsoft has not published the specs for shared

folders and rules.

Larry Jones, group product manager at Lotus in Mountain View, Calif., agreed with Nelson, adding that Microsoft has not published the application programming interfaces (API) for calendaring/scheduling either.

They can't relate

Small developers said they have not experienced the problems Novell and Lotus describe. "We have the entire spec we need at this time," said David Skok, president and chief executive officer of Watermark Software, Inc. in Burlington, Mass.

"Given [that] they have not published [the APIs], we're going to have to define our own extensions. This will close off customer choices in terms of how much mix and match [of clients and servers] they can expect," he explained.

Perhaps more than any other big developers, Lotus and Novell feel cheated because they abandoned their competing Vendor-Independent Messaging (VIM) effort and went with MAPI because of the large installed base of Windows.

Greg Lobdell, group product manager at Microsoft's business systems marketing division in Redmond, Wash., said, "Every bit of communication between the Exchange client and server is done with documented APIs; there are no undocumented APIs."

He said all the extensions do is allow a

back-end service provider such as Microsoft's Exchange or Notes to "expose behavior" to the client. This means that any service provider can add functions that can be used by the client, such as rules and shared folders. Lobdell said these are properties or specific functions of a product and do not necessarily have a place in the API specification.

But competitors do not buy this argument. Unless Microsoft tells developers how clients can use those properties, they are essentially proprietary and give Microsoft a competitive advantage, said Eugene Lee, a director at Banyan Systems, Inc. in Burlington, Mass.

However, Lobdell said all companies are welcome to get the competitive edge by adding their own functions. "We are not in the market of creating commodity products where no one can distinguish themselves," he said.

Marion Weiler, an electronic-mail technologist at Chevron Information Technology Corp. in San Ramon, Calif., said he is less concerned about vendor wrangling than he is about his installed base.

"If they do have unpublished specs, Exchange would be able to offer feature and function sets before anybody else," Weiler noted. "We're not in a single vendor/single product environment, and if they limit the value of our investment, we will work to turn that around."

Change of plans

Microsoft recently said it will not support MAPI on the Macintosh platform. The software giant has already abandoned MAPI support for OS/2 and Unix.

This latest action marks a significant departure from Microsoft's earlier position that it would make MAPI a cross-platform development API, said Eric Hahn, president of Collabra Software, Inc. in Mountain View, Calif. Microsoft has historically supported the Macintosh.

Dropping MAPI support for the Macintosh also means that users will not be able to take advantage of the collaborative features available to Windows users. "Microsoft is forcing the Mac to be a second-class citizen in the groupware situation," Hahn said.

Last week, Microsoft responded that it would recommend the Common Messaging Call (CMC)—a vendor-independent messaging API—for the Macintosh, although a spokesman acknowledged that CMC is not as powerful as MAPI.

—Suruchi Mohan

USF&G decides database plans; Insurer selects Sybase, not Microsoft

By Kim S. Nash

USF&G Corp. recently made a surprising database decision. Although the \$14 billion insurer's client/server dream counts heavily on Microsoft Corp.'s Windows NT operating system, USF&G bypassed Microsoft's database to standardize on Sybase, Inc.'s product instead.

Crucial to USF&G's client/server vision is keeping the company untethered from specific vendors, according to Tom Lewis, chief information officer at the Baltimore-based company. If Windows NT falls apart, for example, USF&G will go with Unix, he said.

"None of this is religion to us," Lewis said.

Likewise, USF&G has avoided Sybase's PowerBuilder development kit in favor of object-oriented tools from other vendors.

Yet the notion did cross USF&G's mind that going with Sybase's System 10 database instead of Microsoft's SQL Server could lead to compatibility problems. Microsoft has pledged to increasingly tie together SQL Server and NT, positioning the two as peas in a pod.

USF&G examined technical support carefully. Microsoft and Sybase, once joint developers of the SQL Server database, dissolved much of that partnership a year ago.

So before Lewis signed a multimillion-dollar license with Sybase, he said he talked extensively with both Bill Gates, Microsoft's chief executive officer, and Mark Hoffman, Sybase's CEO, to be sure the vendors would cooperate with each other in case of technical problems. "It's in Microsoft's interest that people succeed using Sybase, or any other database, on NT," he said.

USF&G's client/server setup sandwiches Compaq Computer Corp. PC servers running Windows NT and Sybase's System 10 database between AT&T Global Information Solutions Unix boxes—also with Sybase—on the high end



USF&G's Tom Lewis grilled Microsoft's Bill Gates and Sybase's Mark Hoffman to make sure the vendors would cooperate.



USF&G's Ron Shelby negotiated "most-favored" pricing from Sybase on services and consulting.

and Windows desktops and laptops on the low end.

USF&G expects to roll out a new Sybase-anchored application next quarter, giving mobile insurance agents dial-up access to corporate databases on NT and Unix, said Ron Shelby, assistant vice president of USF&G's information management division.

As much as Microsoft may want to become a contender in the enterprise-level database market, the company must be realistic, said Cary Prague, president of Cary Prague Books and Software, a Windsor, Conn.-based independent consultant who works with insurance and other companies.

Microsoft SQL Server is clearly for workgroups, Prague said. Though Windows NT "is an outstanding network platform," he said, "a company that wants to get serious about bringing data down [from mainframes] should not go with Microsoft [SQL Server]."

To address these issues, Microsoft plans to ship SQL Server 6.0 in August with new features such as multiprocessor support and replication capabilities designed to enable remote databases to keep in sync with central ones.

NT servers are still catching up to other boxes. See page 45.

USF&G has agreed to buy, at an unspecified discount, \$2.3 million worth of Sybase software this year and next and has signed "a healthy agreement for consulting," CIO Tom Lewis said.

Anti-establishment

USF&G opted for Sybase's System 10 database to run on its Windows NT platform rather than Microsoft's SQL Server database for several reasons:

Sybase System 10

Proven, more mature database; offers Replication Server for copying and distributing data

Microsoft SQL Server 6.0

Little experience with enterprisewide distributed databases; tied to a single operating system—Windows NT

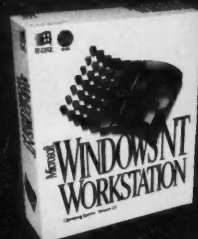


A black and white photograph of a person in a dark suit and patterned tie, holding two computer monitors. Each monitor displays a close-up of a wide, toothy grin, as if the person's face is being projected onto the screens. The person's hands are visible, holding the frames of the monitors.

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Computer Industry

Briefs

Wang stake sold

The deal between Wang Laboratories, Inc. and Microsoft Corp. has been completed, with Microsoft purchasing \$50 million of convertible preferred Wang stock. This amounts to a 10% stake in the Lowell, Mass., company. The agreement, which was announced April 12, settles Wang's patent infringement suit against Microsoft.

Frame buys firm

Frame Technology Corp. in San Jose, Calif., has agreed to acquire Mastersoft, Inc., a Scottsdale, Ariz., maker of conversion, viewing and document comparison software. The purchase will help Frame, a maker of document creation, management and distribution software, with its strategy to let data contained in various formats be placed in document repositories for reuse.

Fore buying spree

Fore Systems, Inc. attempted to bolster its position in the switching market with the purchase of Applied Network Technology, Inc. in Westford, Mass., for \$35 million. Pittsburgh-based Fore also acquired Rainbow Bridge Communications, Inc. in Washington, a maker of Asynchronous Transfer Mode software.

SHORT TAKES Retrieval software company Fulcrum Technologies, Inc. in Ottawa has agreed to acquire French systems integrator Fulmedia S.A. for \$1.5 million. Springfield, Mo.-based Applied Cellular Technology, Inc. has agreed to acquire Baler Software Corp. in Rolling Meadows, Ill. San Diego-based multimedia software maker Allegiant Technologies has completed its initial public offering on the Vancouver Stock Exchange. Micro Focus, Inc. in Palo Alto, Calif., has completed its acquisition of Burl Software Laboratories, Inc. in Raleigh, N.C.

McAfee to buy Saber Software

Firm strives to be No. 1 in PC administration suites

By Steve Moore

McAfee Associates, Inc. last week announced plans to buy Dallas-based Saber Software Corp. for \$40.6 million. Santa Clara, Calif.-based McAfee is making a bid to become the leading provider of integrated PC administration suites, a key segment of the fast-changing client/server management market.

McAfee also seeks to broaden its customer base and gain Saber's sales channels.

According to International Data Corp. in Framingham, Mass., McAfee and Saber together hold 41% of the market for software suites that bundle PC LAN management functions such as software distribution, software license metering and hardware and software inventories (see chart).

Analysts said users will benefit in the long run as the companies begin to integrate their product sets, including non-overlapping pieces such as McAfee's

antivirus applications and Saber's NetWare LAN management applications.

Next year, users will see the companies "merge best-of-breed products into combined products," said Bill Larson, McAfee's president and chief executive officer.

McAfee will "deliver on all commitments to McAfee and Saber customers" and will help them through the transition to Microsoft Corp.'s long-awaited Windows 95 operating system by ensuring "no changes in product road maps in the next six months," Larson added.

Users expressed confidence that the products would work well together. "The

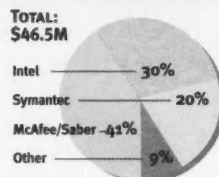
biggest thing is to try to standardize everything across your network so [that] it's easier to manage," said Randy Manks, a senior LAN administrator at Oppenheimer

Management Corp. in Denver. "Both [the McAfee and Saber] tools seem to do a pretty good job of that, and they will probably integrate everything."

Because McAfee's purchase of Saber will "double our sales force and engineering staff overnight, we probably won't have to hire for a while. But I don't see the need for a reduction in research and development, sales or technical support" staffs, Larson said.

While some Saber product names will likely be retained, the merged firm will operate under the McAfee name, Larson said.

1994 U.S. integrated PC administration suite market



Source: International Data Corp., Framingham, Mass.

Red Brick runs into warehousing competition

Oracle, Sybase plan rival products

By Kim S. Nash

Red Brick Systems better have its data warehouse in order.

The privately held, Los Gatos, Calif., firm said it has made a nice living for the past nine years. It is a leader among firms selling databases designed specifically for data warehousing to users looking to build complicated decision-support and marketing applications. General Mills, Inc., Longs Drug Stores Corp. and Sara Lee Corp. are among Red Brick's 70 customers.

But today, Red Brick faces a pack of competitors salivating after its market. Sybase, Inc., Informix Software, Inc., IBM and a bevy of other traditional database companies have recently announced marketing and product plans designed to gain ground in the data warehousing arena.

Claiming these competitors are just retrofitting transaction-oriented databases into warehouses, Red Brick said it offers users warehouses built from the ground up.

Even so, some observers do not give Red Brick favorable odds for survival. With 100 employees — including just 16

salespeople — the company is small. Furthermore, the technical differentiators that have propelled it from a four- to 70-member installed base in 18 months may get lost in the huff and puff of a relational onslaught, said Frank McGuff, a

pected to be a big warehouse contender.

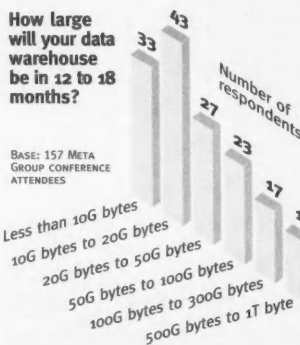
"Oracle's the big man on campus. That alone will convince some customers to buy, regardless of what Oracle eventually comes out with," McGuff said.

According to Chris Erickson, Red Brick's president and chief executive officer, sales tripled last year compared with 1993, and the company is "well ahead" of its goal to double sales this year. The average customer deal is \$150,000, including software and services, said A. J. Brown, vice president of marketing.

Yet Erickson acknowledged that at least

How large will your data warehouse be in 12 to 18 months?

BASE: 157 META GROUP CONFERENCE ATTENDEES



Source: Meta Group, Inc., Burlingame, Calif.

consultant at Braun Technology Group in Chicago.

For example, though relational database market leader Oracle Corp. has yet to enumerate any coherent warehousing strategy, the company is ex-

some user hearts cannot be won because some shops routinely standardize on one vendor for all database needs.

"But that's often a mistake," he said. Transaction processing applications are too differ-

ent from warehousing systems to be run on the same database, he said.

For example, Healthsource, Inc. in Hooksett, N.H., opted to split warehousing from transaction processing databases last year. "Cramping warehouse stuff onto the same system running production applications just means that you do neither very well," said Brian Harney, the company's database administrator.

Defensive moves

To further decrease the cost of investment, and therefore the risk of going with a smaller vendor, Red Brick plans to launch a workgroup warehouse product line in July, Erickson said.

Instead of giant warehouses of several hundred gigabytes of data, some users want smaller "data marts" spawned from primary warehouses. These marts are often specific to a single department and are easier to manage than their larger parent warehouses (see chart).

On the sales front, Red Brick plans to add two more salespeople this year, Brown said. But the company counts more on resellers, he added.

Oracle to ship warehousing database. See page 77.

THE VIEW FROM THE TOP

An exclusive CEO/CFO survey
on IT in Computerworld's June 12 issue

This exclusive survey of major U.S. companies asks
CEOs and CFOs their views on:

IT STRATEGY

- *Does IT hold the key to competitive advantage?*
- *Is IT strategy effectively linked with business strategy?*
- *Do investments in IT pay off?*
- *Do IT projects come in on time and on budget?*

IT MANAGEMENT

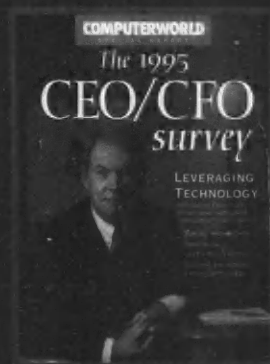
- *How satisfied are CEOs with the overall performance of their IS organization?*
- *How do CEOs rate the chief information officer's performance?*
- *What skills are important in the CIO function?*
- *How is the IS function organized – centralized, decentralized or a mix?*

IT IN THE EXECUTIVE SUITE

- *What percentage of time do they devote to IT decisions and issues?*
- *How do they get their information on IT?*
- *Do they use a PC/executive information system?*

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JUNE 12 ISSUE

**Finance in Phoenix
maxed out their mainframe.**

**Operations in Oslo
is screaming for NT.**

**Marketing in Muncie
wants database miracles.**

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Who's the boss?

Whether or not it is true, the story of the million-dollar mug is one of my favorites. It's as relevant today as it was several years ago when it allegedly took place.

As the story goes, an IS director met with his IBM rep to consummate a very major mainframe deal. The buyer knew he was going with IBM and had read IBM's contract the night before.

As they sat in the buyer's office, a secretary popped in with the buyer's morning coffee in a forest green mug with "Amdahl" printed in gold on the side facing the sales rep. One look at the mug and the rep had dropped the contract price by a million dollars by the end of the negotiations.

Moral of the story: Back then and even more so now, the customer is king, and probably to a far greater extent than he realizes. This is an important point to ponder when assessing the news of the day.

For example, some customers have expressed a mounting concern over the growing "power" of companies such as Microsoft and Computer Associates. Together these companies will account for less than \$4 billion in U.S. sales this year. By contrast, you, the customer, will purchase some \$90 billion worth of software.

Further, for virtually every product these two companies sell, there is not only an alternative vendor's product available, but in some cases an alternative technology. So if CA unwisely decided to escalate prices in the discrete mainframe markets it dominates, then there would be no time like the present to inform it of your long-term plans to migrate away from the mainframe. In fact, the threat of mainframe alternatives is what got CA and other companies to institute more buyer-friendly software licensing schemes in the first place.

There is also the concern that companies that become big forget about the things that helped them grow, such as customer support. Let me tell you, a vendor's worst nightmare is picking up a copy of any trade paper and reading about the poor job its customers say it is doing with support. So if your vendor is unresponsive to complaints, just drop a dime.

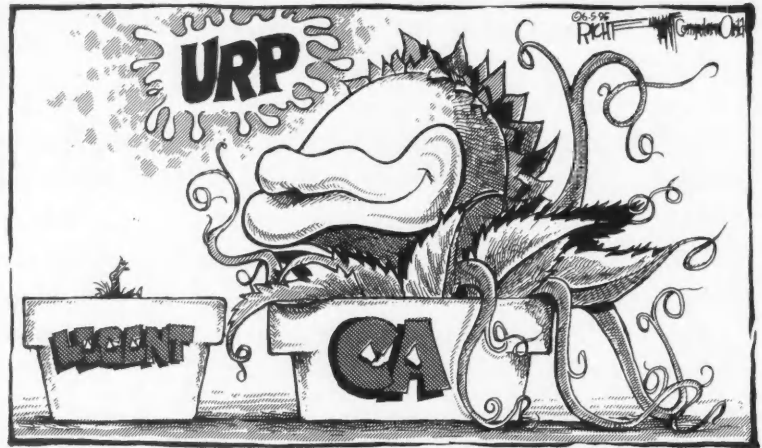
Take heart, too, in the ways in which such big vendors have conducted business in the past. By effectively killing Microsoft's purchase of Intuit, the government argued that Microsoft would raise prices when and if it came to dominate the personal finance market. In fact, it has steadily lowered prices of most of its products even as its market share grew.

And every time CA made a major acquisition, be it Cullinet, Pansophic or Applied Data Research, there was fear and consternation from customers of the acquired company. Understand, however, that CA's entire business model depends on maintaining those customers and migrating them to other products. To that end, CA has been very successful. By this point, it knows how to make an acquisition as well as or better than any other company.

Remember, there's always the mug.

Bill Laberis

Bill Laberis, Editor in Chief
Internet: blaberis@cw.com



Letters to the editor

'Trash' talk

I found "Retrain, don't trash" [CW, May 22] quite refreshing. It's sad that information technology managers are so eager to secure client/server talent that they ignore the older, more experienced mainframe crowd, whose members often possess a tremendous amount of systems and business savvy. It has also been my experience that it works to put the two groups together in an environment that enables knowledge transfer, but only when real projects are handed out with real deadlines and with team members from both groups using the new technologies.

To a motivated mainframer, client/server is really just another technology, and many are dying to make the switch. If information technology managers would be more willing to support these people on new client/server projects, I wouldn't be surprised if most of our desperate client/server talent searches would disappear.

Dave Wright
Virginia Beach, Va.
david.wright@cbn.org

Your comments regarding retraining represent what I have believed for years, but I could not get anyone to listen to me. Thank you for so clearly stating what I believe is so obvious: that retraining is the best way to advance a person's skills.

Stephen R. Page
Vadnais Heights, Minn.
76452.1514@compuserve.com

Praise be that someone has realized that we old legacy types still have some value in this business. Cutting loose a Cobol programmer

with 20 years' experience is throwing away 20 years of expertise in the business. If that's not throwing out the baby with the bathwater, I don't know what is.

I have been in this business since 1969. I've learned a lot of languages over the years, including Visual Basic. The fundamentals of good system design and data flow are as important now as they ever were, and that's what an experienced corps of veterans can bring to a project.

Eric Helland
Milwaukee
UWRL30A@prodigy.com

Training budgets need redirection

Michael Schrage's "Training for MIS failure" [CW, May 8] is right on in almost every way, especially in pointing out the essential characteristics of adult learning for practical (i.e., work-related) purposes. However, I think he is wrong to recommend that "cutting the training budget ... would be a healthy start." Effective mimetic education will still take time and cost money for the following kinds of activities:

- Identify and foster learning skills in coaches, apprentices and team members.
- Plan, evaluate and continually improve the learning experience.
- Reward coaches, apprentices and teams for increasing the "intellectual capital" of the organization.
- Create and maintain the infrastructure to capture and access that intellectual capital.

These are much better investments than removing employees from their workplace, renting countless hotel rooms and producing dust-accumulating course manuals.

Mary Callahan
Roswell, Ga.

More letters, page 39

Money talks

Charles Babcock's "Needed: a new client/server metric" [CW, May 1] raises a good point but fails to address the underlying problem, which is common to mainframe and client/server applications.

Any business sees its IS investment, whether for punch cards, mainframes or PCs, in terms of return on expenditure. The company style of management, the IS department's approach and the "buy-in" of the end user are the determining factors, irrespective of the technology choice. The high expectations driving the client/server market will wane and be replaced, hopefully, with a more balanced look at "What tool will help this corporation meet its goals?"

Patrick J. O'Meara
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Viewpoint

Don't forget incentives in groupware strategy

Michael Schrage

Watching IS organizations attempting to implement enterprisewide groupware brings to mind Dr. Johnson's 18th-century epigram about dancing dogs and women preachers: It's not that it's done well, it's that it's done at all.

Most Notes, GroupWise and Share rollouts seem inspired by a more contemporary but equally troublesome cliché: If you build it, they will come.

Guess what?

They won't.

What many companies are discovering — at great expense — is that all this groupware that's supposed to promote such mom-and-apple-pie values as collaboration,

knowledge sharing and teamwork is fundamentally irrelevant to how most people do their jobs. Paradoxically, the better the technical implementation of groupware, the more counterproductive and problematic its organizational impact can be.

It's fashionable to claim that the reason for this is that these organizations are "culturally incompatible" with all the warmth and goodness that groupware can provide. To wit, companies that don't share information and expertise aren't going to start swapping data just because they've gone on Notes. Professional service firms run by rugged individuals don't all hold hands and sing "Kumbaya" just because they're digitally wired.

That's obvious and inarguable. What is so surprising, though, is just how few organizations behave as if they grasp the essential rule of successful groupware implementations. Designing incentives is just as important as designing technology.

If your organization already is collaborative, cooperative and into sharing information across divisional boundaries, then groupware represents a natural extension of the way you do business. Your implementation problems will be technical and training-oriented. If, on the other hand, the organization is rife with divisional rivalries, turf wars and aggressive intrapreneurs all bidding to make a name for themselves, then using groupware as a medium to get people to work together represents disgraceful

management. Giving someone collaborative tools doesn't make him collaborative any more than handing someone a telephone turns him into a conversationalist.

You want to change how people collaborate? Don't just hand them different tools; offer them appropriate incentives. Why should someone post useful information on a Notes database if someone can give credit — for the presentation? If two divisions are maneuvering for the

same slice of the corporate budget, just how transparent do they want to make their proposals to their in-house rivals? Do the benefits of cooperation outweigh the costs of competition?

The obvious response to

this, of course, is "What the heck does IS know about designing incentives for collaboration?" Exactly! That's precisely why IS has to insist from the very beginning that groupware isn't just about transparency, replication and semi-structured databases. It's about how individuals are rewarded and punished for sharing and/or withholding information. The honorable, ethical thing for most IS organizations to do when they're asked to bring groupware to the enterprise is to insist that a system of incentives be phased in right alongside the technical implementation to help ensure the technology is actually used in the way the organization thinks it wants.

Maybe individuals whose work is cited, referenced or downloaded the most could get cash awards. Perhaps managers whose workers don't draw upon the resources of the network could be reprimanded for not pushing professional development. No matter. The dirty little secret of today's groupware implementations is that most IS departments view incentives as irrelevant to their groupware missions, and they lack either the competence or courage to insist that their companies explicitly address this issue. That's not just uncollaborative behavior; it's unprofessional, as well.

A research associate at MIT Sloan School and Media Lab, Schrage has written *No More Teams!: The Dynamics of Creative Collaboration*, recently published by Doubleday Currency.



Giving someone collaborative tools doesn't make him collaborative any more than handing someone a telephone turns him into a conversationalist.

Cry for information access

Marcia Blumenthal

Give me access to information to make better decisions — and give it to me *now*. This is the call for action from high-level management and chief information officers' peers, who appear to be dissatisfied with the progress CIOs are making in giving them access to information that will help them make better business decisions.

The inability to deliver information is a continuing factor in the credibility gap between CIOs and top management. The crying need to do business process re-engineering and the technical need to move to client/server can provide a way for the information executive to diffuse a highly charged political situation. Those factors also give CIOs opportunities to prove themselves strategically important to the enterprise.

An annual survey of executives by Ernst & Young and *CIO* magazine revealed that CIOs' superiors and peers rated accessing corporate information and managing the information environment as top concerns. But a major discontinuity exists here because those executives don't see information systems playing a leadership role in providing these services. Another survey, this one conducted by Deloitte & Touche,



IS can enable access to management information and to the technologies that play a major role in making that information available.

found that 71% of 400 CIO-type respondents were dissatisfied with legacy systems' inability to give them access to management information.

Hmmm, sounds like a really big opportunity. But there's a caveat.

Everyone plays a role

As John Tyler, senior vice president and chief technology officer at Houghton Mifflin puts it, no one business unit manages information. Information is used across the enterprise. Hence, CIOs and other executives are skittish about where IS stands when it comes to bringing the enterprise into the competitive forefront — making information easily available to all corporate denizens.

CIOs can certainly be key members of the interdenominational teams that determine what information is needed enterprisewide. In many situations, this is already the case, but it is necessary to have top management and peer executives understand that this is the way to proceed. The perception of reality is at least as important as what really goes on in an organization.

Furthermore, IS can enable the implementation of access to such information and to the technologies that help make that information available, whether it be electronic data interchange, E-mail or imaging.

For years now, a debate has been raging in the IS community: Are CIOs leaders or just enablers when it comes to the IS mandate? As more than one IS executive has noted, you don't wait to get invited to the strategic planning table. One journalist colleague of mine expressed the idea wonderfully, with a sign on his office door that said "barge right in."

IS executives have also been chided for not speaking business lingo or expressing the bottom line in how IS adds value to the enterprise. In fact, this has been the talk within the

Blumenthal, page 38

Cobol forges ahead

David E. McFarland

Cobol has been declared dead dozens of times over the past 35 years. Considering what we read about it, the language must finally be dead and gone.

Since Cobol's development in 1959, many languages have been invented to replace it. In the early 1960s, there was APL. In the mid '60s, PL/I was promoted by the colossus of IBM as the only language you would need in the future. By the late '60s, Basic was on the scene, and in the '70s, Pascal was thought to be the answer. More recently C and C++ were crowned as the solution.

Each time new languages arrive, many companies blindly adopt these saviors and press ahead. Often they drop the new language and return to Cobol. This brings up questions of why they switch and why they give up and return to Cobol.

Most switch because of the promise of improved development productivity. There are several reasons for their return. Many new languages are not industrial strength. They are excellent for a 10- to 50-line program, but fall down on a 500,000-line system, or they handle a 100-record file fine but not a 10-million record file.

It turns out that the development of Cobol was very well done. It is extremely difficult to design a language that is elegant, to the point and self documenting at the same time. Cobol is such

a language. C, APL and PL/I are good contra examples.

Why are the trade journals so heavily oriented toward the new savior of the day? It could be a side effect of the tremendous amount of money spent on promoting new technologies. There is an impression that people will be more attracted to the new whiz bang than the evolution of the old standby. It's



There are more than 3 million programmers in the world, about 80% of which are are Cobol programmers. So obviously Cobol is alive and doing very well.

true that many of these new tools have some great ideas, and some deserve a place in the development world.

Dominant language

According to Gartner Group, there are more than 240 billion lines of code in all languages, about 80% of which is Cobol. There are more than 3 million programmers in the world, about 80% of which are Cobol programmers. So obviously Cobol is alive and doing well.

During the 1980s, Cobol vendors did not increase the number and sophistication of their development tools to satisfy user wishes.

More recently, Cobol vendors are providing sophisticated enhancements utilizing new concepts. Application generators, not unlike database front ends, are now available. Screen and graphical user interface generators, object orientation and graphics capabilities are here. Client/server access from Cobol is now commonplace.

The Cobol compiler vendors and tool providers will continue to modernize the fleet to enable the world to access the tremendous volume of legacy data and take advantage of the huge base of Cobol programmers. How expensive is it to retrain these productive programmers in a tool that is no more effective than modern Cobol?

Information systems management should be careful about wandering off using new development languages without verifying they are industrial strength and well proven.

McFarland was a cofounder of Ryan-McFarland Corp. Today he is director of The Cobol Foundation in Indian Wells, Calif., a consortium dedicated to educating the industry on the status of Cobol.

Blumenthal

CONTINUED FROM PAGE 37

community for the past 20 years or so. Enough already.

Overcoming this process is not easy. As one IS executive at a utility company said, changing the corporate culture is the most difficult and frustrating task he has ever encountered. When the chief executive wants to wear a tie on Friday and the rest of the company is enthusiastic about a "casual day," change dynamics become daunting.

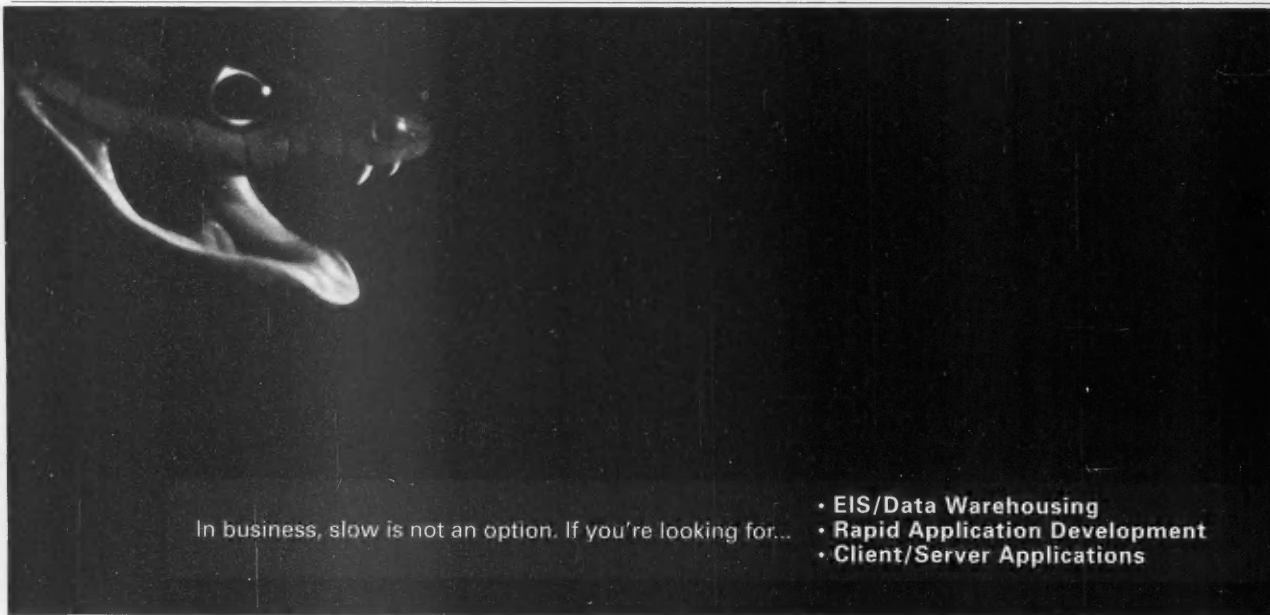
The solution brings to mind Bill Murray in the movie *What About Bob?* — take one little baby step at a time. This approach to change may be slow, but it can be a powerful mode of operating, and successful information executives often employ it.

Empowerment of executives and workers has altered the meaning of information.

Rethinking what information is and how it will affect the organization is a critical task not confined to the IS ranks. But who has a better overview of how a system works and what systems mean to the enterprise than the folks in IS?

Blumenthal was founding editor of *CIO* magazine. She is a high-tech journalist and consultant in Newton, Mass.

The inability to deliver the information goods is a continuing factor in producing a credibility gap between the CIO and top management.



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Letters to the editor

It's a small world

I cannot concur with the juggernaut-like image of the coming information technology workplace that "Hello, cruel world" [CW, May 15] presents. I feel the changes it foresees are long overdue and will benefit those employed as "information society technicians."

Only one-third of the workforce is employed at firms with more than 50 employees. That means that two-thirds are working at smaller, more focused, less stable companies—like the great majority of construction industry workers.

Are carpenters devoid of professional honor simply because their profession happens to consist mostly of contracted positions? Do we assume that architects and doctors suffer because they have no "company" to be loyal to? These workers aren't stealing groceries because they can't work for huge bureaucratic organizations.

Maybe we'd be better off if we let information workers provide services in an open market. We may find that we are better able to serve our customers if we have to market our products based on our individual merits.

Jim Bair is quoted as saying, "The world is changing from a caring social place to one of total Darwinian natural selection." Yet it is only the past 200 years that have provided the "security" of bigger enterprises to significant percentages of any population.

Michael MacDonald
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Groupware works

I was taken aback by Jeffrey Henning's "Groupware dilemma" [CW, April 24], which oversimplifies groupware as "the next big thing" that management has "latched onto."

I can speak directly of a very successful implementation of one of the products Henning maligns. Notes has become the backbone of some of our most important business processes, especially in sales-force automation.

To be effective, groupware must have more to offer than electronic mail and database management: It must have an architecture that offers scalability, reliability and manage-

ability. It also must offer an open application development environment, a robust message transfer agent, a rich object store, rigorous security and replication for geographically dispersed and mobile workers.

Notes has helped improve our communication, collaboration and coordination regardless of geographic location. It has allowed the sales force to share critical information more efficiently and effectively, and that has reduced response time and improved customer service.

Michael G. Meade
Senior vice president, MIS
Mortgage Guaranty
Insurance Corp.
Milwaukee

OS/2 is an also-ran

I was amused at reader David McKinney's incredible statement, "I hope Windows 95 makes it out this year so OS/2 can dispatch it as easily as it did NT" [Letters to the editor, CW, April 24]. OS/2 dispatched NT? That's certainly news to me, because from all indications that I can see, Windows NT is alive and well.

The momentum Microsoft is gaining in the corporate enterprise market is significant. One reason these products are so well-thought-of is their outstanding connectivity features, an area in which OS/2 falls short.

A more mainstream view might be that Microsoft will continue, even strengthen, its dominance of the desktop as Windows 95 and Windows NT converge over the next several years. I expect OS/2—assuming it somehow manages not to lose

too much ground during this onslaught—to be a low-volume player, installed mainly in organizations whose IS departments are loyal to IBM. In other words, exactly what it is today.

Mickey Langley
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Plugging Windows 95

In "The dawn of the 32-bit desktop" [CW, April 24], you closely associate LAN connectivity and Windows 95 with plug and play, as if the two are interchangeable. This is misleading. The plug-and-play feature in Windows 95 allows users to add new hardware of any type, not just networking components, and have the computer automatically configure the hardware and software drivers needed for the new component with little or no

user intervention.

You also state that although Windows 95 is a 32-bit system, it is "hampered" by the need to be compatible with Windows' 16-bit software. Windows 95 does contain some 16-bit code, largely to allow many older 16-bit applications to run. However, Windows 95 does allow for much greater handling of "system resources," which were a frequent cause of crashes in Windows 3.x. Users who run just 32-bit applications need not worry.

Brian Honey
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bhoney@aol.com

Proceed with caution

As independent business analyst/consultants working in the field, we couldn't agree with Bill Carico more ["The CEO's role in IT decisions," CW Leadership Series, April 17].

The majority of senior management-dictated client/server systems are developed without detailed user requirements or a cohesive external design in free-form, unstructured languages by self-proclaimed egocentric acronym gurus with recent computer science degrees and no practical business experience.

Many of these systems are ill-conceived, impractical, undocumented, unsecured, unmodifiable and virtually unmaintainable. As evidenced by the high rate of failure, implementation of these systems could be a serious tactical business blunder.

This article should be required reading for all levels of information technology management.

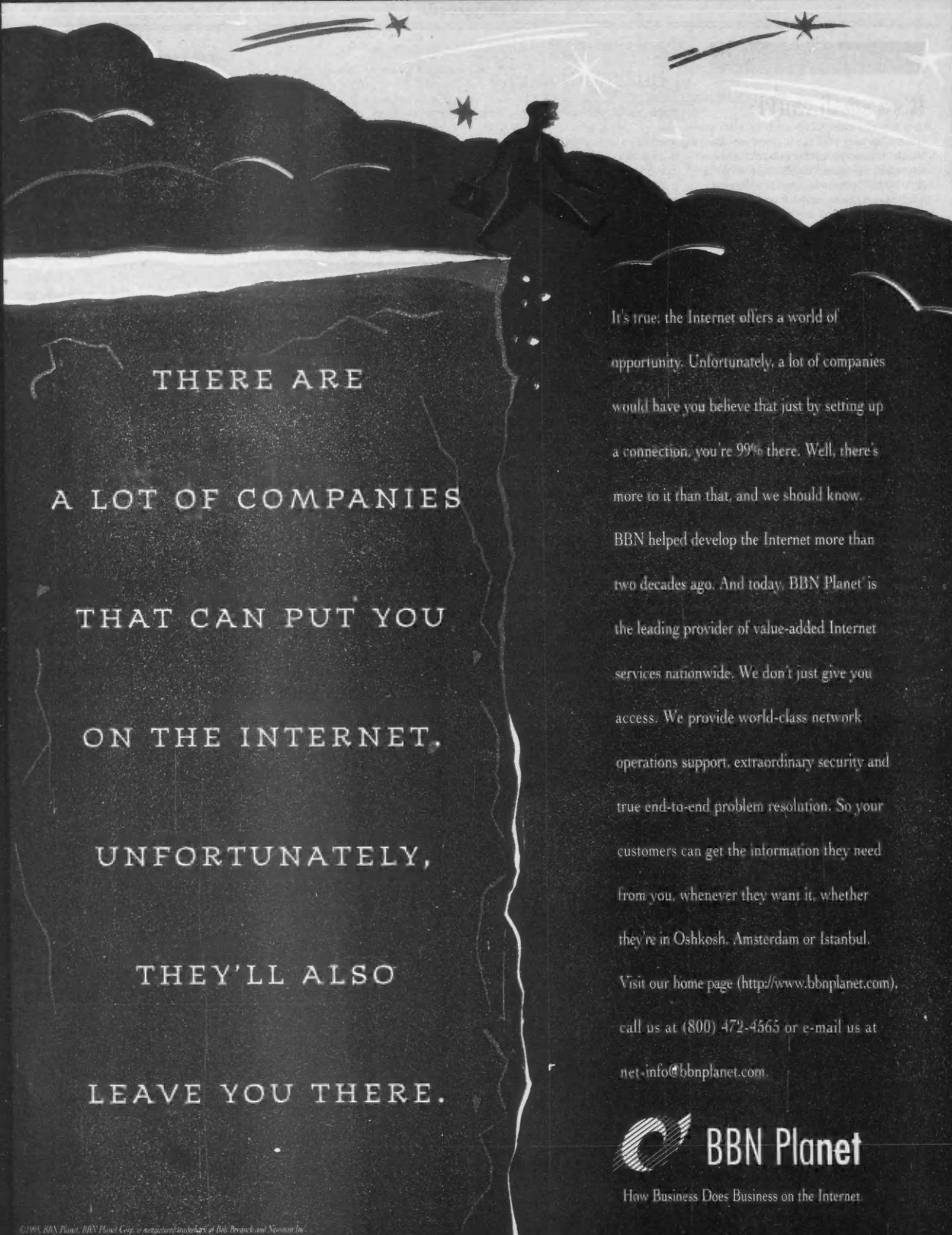
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InVircible: Invincible or irresponsible?

Industry divided over PC virus protection product

By Gary H. Anthes

Everyone agrees that the InVircible PC virus protection product is oddly named, but there is little accord on anything else. The product has sparked threats of lawsuits and Internet flame wars as bad as they get.

Its strongest adversaries call InVircible a dangerous Trojan horse, while milder critics say it represents a flawed implementation of some clever ideas.

Meanwhile, a loyal band of users swears that InVircible offers the most effective virus protection on the market today. They say its critics are misinformed or ideologically biased in favor of more traditional antivirus techniques. The shareware product is developed by NetZ Computing Ltd., an Israeli firm.

Some observers straddle the two camps and say users would get maximum protection by installing InVircible on their machines to act as a virus watchdog, while still using traditional virus scanners on new software before the software is loaded.

Last December, a reviewer for the influential "Virus Bulletin" called InVircible "exceedingly poor at virus detection" because it found just 114 of 248 standard test viruses. The reviewer said InVircible's documentation was "prone to making claims which are palpably untrue," and he viewed the product's cleanup feature "with disdain."

Last week, former "Virus Bulletin" editor Richard Ford, now research director at the National Computer Security

Association in Carlisle, Pa., gave InVircible a mixed report. "It does provide an interesting method of stopping viruses generically, and there are a lot of useful tools in there," he said. "The problem is they come into play after your PC has been infected, not before."

InVircible enthusiasts said it is unfair to compare the tool with traditional virus scanners — which try to match the digital signatures of suspected viruses against catalogs of known viruses — because it is not a scanner. Instead, it looks for characteristic virus behavior over time, which it elicits by laying out "virus bait" (see story below).

Paul Williams, a data security consultant at Revolutionary Concepts, Inc. in Houston, said InVircible does not scan

well but is very good at catching in-progress infections by detecting changes in a PC's files over time.

Williams said he uses a traditional scanner to look for viruses in new software before it is loaded and the scanner catches 96.5% of all viruses. "But 3.5% of viruses will slip by, and InVircible will not only catch those but also repair the damage done by them," he said.

And Williams said InVircible is unmatched in its ability to repair damage because it restores files to their precise original state.

Elf Exploration, Inc. in Houston installed InVircible on all 87 of its PCs after finding that Microsoft Corp.'s virus scan-

As of March 31, there were 2,905 computer viruses listed in Patricia Hoffman's Hypertext VSUM on-line directory published in Santa Clara, Calif.

ner proved too large to run while the PCs were also running network software. Fred Webster, manager of information services, said InVircible found and cleaned up viruses such as Michelangelo, Stealth, Stoned and Monkey as well as the Microsoft scanner and did it "significantly faster."

A drawback for some people, Webster conceded, is that InVircible will not always identify a virus; it will only tell you it has found one.

Asked about the vocal faction critical of InVircible, Webster said, "A lot of people just don't trust the way it works. It's a subjective feeling. A lot of people just think it sounds too good to be true."

InVircible's author explains

InVircible uses expert systems rules and other techniques to recognize the symptoms of viral behavior rather than look for specific virus signatures as scanners do. Therefore, its proponents claim, it can find new viruses that have not yet been analyzed, and it does not have to be constantly updated with new signatures.

InVircible watches for replication, the basic nature of all viruses. It initiates tests for viral behavior, generates "virus baits," checks for memory stealing and senses "piggybacking" — attempts by the virus to attach to the anti-virus software.

"Virus scanners resemble a front door with a fancy alarm system on it, while InVircible

is more like a big dog who waits quietly in the house, watches for an intruder sneaking in through the back door and then eats up the intruder before he can steal anything," said Zvi Netiv, author of InVircible and managing director of NetZ Computing.

Netiv said InVircible costs \$99 and is distributed as shareware on bulletin boards. He said it can be found at INVB602.ZIP on America Online, GO INVIRCIBLE on CompuServe and <http://invircible.com/invircible.html> on the World-Wide Web. Four U.S. agents provide sales and technical support, including Vine Computer Industry in Cicero, Ill., Netiv said. — Gary H. Anthes



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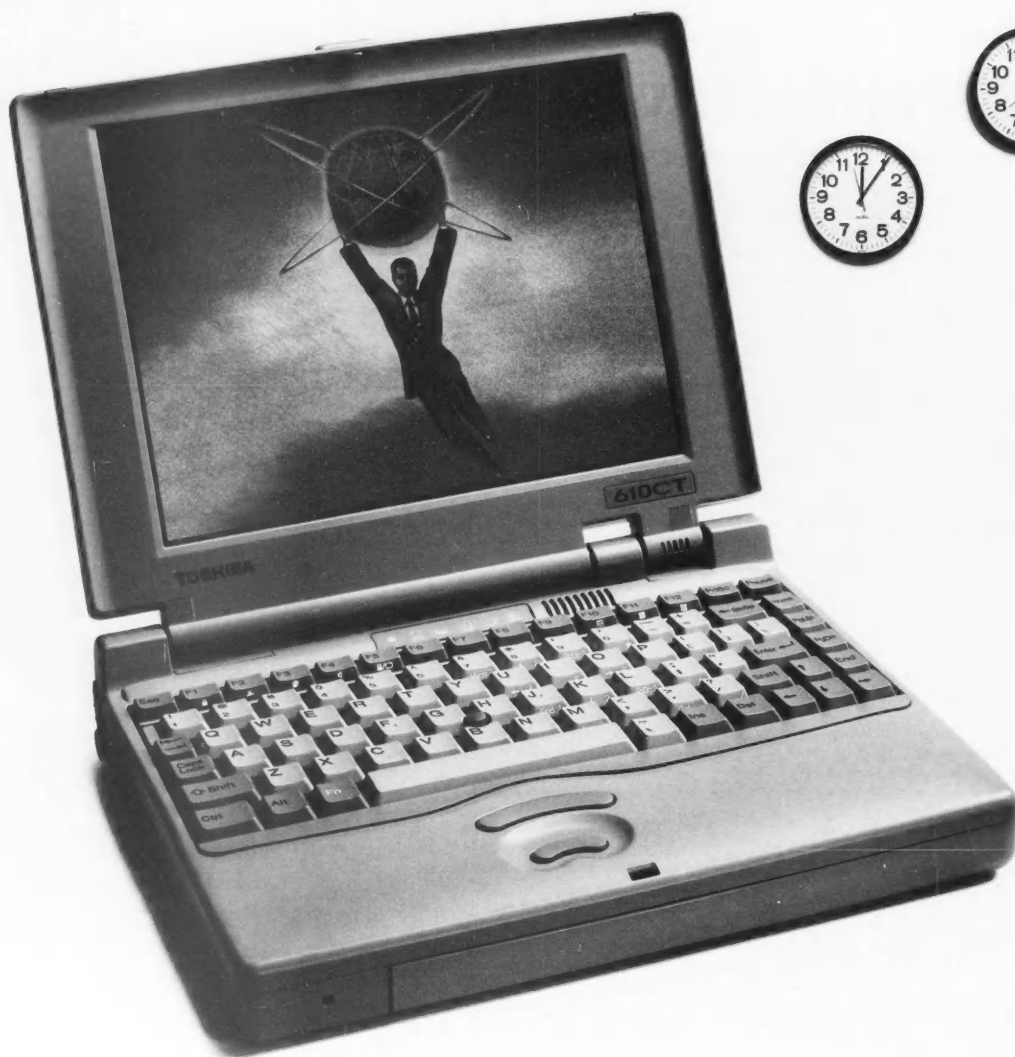
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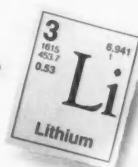
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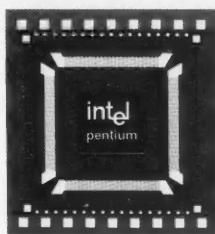
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MANAGEMENT REPORT

NEWS, TRENDS, OPINIONS, AND IDEAS FOR INFORMATION MANAGERS

HOW TO BUILD, MANAGE, AND EXPLOIT A DATA WAREHOUSE (WE'LL GIVE YOU THE BLUEPRINT FREE)

The strategy, says Randy Betancourt – SAS Program Manager, Data Warehousing – can be found in software that:

- Offers a single-tool approach for integrating all the core technologies involved in data warehousing, from back-end access to legacy systems to front-end decision support and business intelligence capabilities.
- Holds down costs by capitalizing on resources you already have...and by seriously re-evaluating the need for an expensive DBMS.

To meet the needs of business decision makers, information managers are looking for ways to provide direct access to a wide range of corporate data stored in many different sources and data formats.

In doing so, IT professionals face the challenge of making data easily accessible, without impacting the performance of vital operational systems or compromising data security. The solution they're turning to is data warehousing.

"Data warehousing is a strategy and a method for physically and logically separating operational data from decision support data. This decision support data is derived

from the operational data, but is continually refreshed and readily accessible to end users, who can get to the business information they need without impacting operational systems," says Betancourt.

"At SAS Institute, we're helping business decision makers gain access to legacy data, then integrate and transform that data into meaningful information."

SAS Institute is "the only vendor out there that's providing a complete end-to-end software solution for accessing, managing, analyzing, and presenting data," asserts Betancourt, who points to the SAS® System of software's leadership role in three major areas.

(continued on next page)



SAS INSTITUTE INC.

THE SAS MANAGEMENT REPORT

ACCESS TO LEGACY DATA AND TRANSFORMATION TOOLS

"The SAS System grew up in the mainframe environment," says Betancourt, who quickly adds that SAS software's hardware-independent structure now takes it seamlessly from Big Iron to your favorite desktop. "We have a strong affinity for legacy data such as IMS, IDMS, CA-DATACOM/DB®, DB2®, VSAM, and sequential files. And we've made these data stores readily accessible, since there's a substantial investment there."

Direct links to a variety of data sources are built into the SAS System, together with a fourth-generation language that makes transforming data as straightforward as possible. In fact, SAS software provides a relational model for data management similar to the commercial relational database management system (RDBMS) suppliers.

TOOLS FOR MANAGING THE DATA WAREHOUSE

"In setting up a data warehouse, many customers assume their first decision is to buy a relational database management system to store the data for the data warehouse," says Betancourt. "Truth is, data warehousing simply does not require many of the features of a database management system."

He explains that "relational database management systems have been optimized for online transaction processing — with facilities such as two-phase commit, rollback and recovery, and other database features. Data warehouses, on the other hand, are intended to be read only."

There is no update that takes place from the user perspective. Data warehouses are loaded from transaction systems and periodically refreshed from the incremental transactions. Many of the facilities associated with traditional database management systems are merely overhead in a data warehousing environment."



Randy Betancourt,
SAS Institute
Program Manager
for Data Warehousing

Betancourt adds that SAS data structures are relational in nature and have all the requisite features necessary for data warehousing including indexing, compression, and a security model.

"SAS software has the right capabilities, but doesn't consume overhead for facilities that are not needed," he explains. "Coupled with the fact that most companies have SAS software already installed, you could say many organizations are well on the way in reaping the benefits of data warehousing without having to invest in new technologies. And, even if an organization is licensing SAS software for the purpose of data warehousing, the cost — in relation to the cost of a full-fledged database management system — is much less."








PLUS WAYS TO EXPLOIT THE NEWLY ACCESSIBLE DATA

"The net takeaway from building a data warehouse is empowering with information to make better, more informed business decisions," says Betancourt. "SAS Institute has always excelled in the area of decision support. There is no other company with more experience delivering critical business information to decision makers across enterprise."

He adds that most vendors offering tools for exploiting the data warehouse support Windows™, and occasionally OS/2® and UNIX® that SAS Institute's software runs seamlessly across more than 100 hardware platforms from the desktop to the Data Center.

"Any application written in one environment can be easily executed in any of the others," Betancourt explains, "with each part of the application running where it makes the most sense. So, while providing a complete end-to-end solution for data warehousing, the SAS System addresses an organization's client/server computing needs as well."

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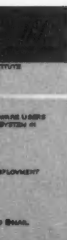
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1. Do you see data warehousing on the horizon at your company?

Yes No Not Yet

2. Do you see data warehousing as an effective vehicle for giving decision makers easy access to corporate information? Why or why not?

3. Are you using SAS software in your data warehousing projects?

Yes No Not Yet

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DATA WAREHOUSE THE BACK THE BEGINNING

I'm often asked to sum up SAS test
warehouse. Simply put, we believe

- ◆ To present a "single version of the truth" that is maintainable, current, and easily accessible to business users.
- ◆ To reduce interruptions of IS people to support requests on effective data delivery.
- ◆ To empower business users to be able to access and use their own information needs.

The SAS System Three-Tier



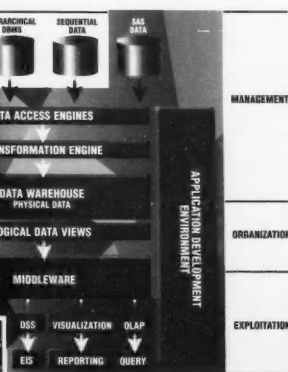


WAREHOUSING: BACK END IS JUST BEGINNING

SAS Institute's philosophy for building a data warehouse is to believe the goals of data warehousing are: "vision of the truth" that is consistent, secure, and easily accessible for a wide range of

of IS personnel, allowing them to concentrate on delivery strategies. Users become more self-sufficient in meeting their needs.

Three-Tier Computing Architecture



To achieve these goals, we've developed our own blueprint for data warehousing success. It's a blueprint that enables organizations to leverage their investments in existing technology as well as exploit their existing SAS modules. Take a look at this blueprint and you'll discover that SAS Institute is the *only* provider of end-to-end data warehousing solutions. Here's a preview:

The Back End: Accessing the Data

The first step in building a data warehouse is accessing operational data from wherever it resides, and in whatever format it embodies. SAS Institute provides a powerful 4GL coupled with access methods that tap directly into a variety of legacy databases – more than 50 different data structures across diverse computing environments, from xbase files on the desktop to DB2® on the mainframe.

Managing the Data: Preparing for Business Analysis

Once accessed, data must be transformed into a consistent, integrated form. This process involves cleaning, reconciling, de-normalizing, and summarizing data – and then loading the data into logical data views that can be surfaced into a variety of analytical and reporting applications.

The Front End: Exploiting the Data

A data warehouse without sophisticated access, analysis, and reporting capabilities is like a library without a card file. SAS Institute software provides comprehensive tools in all these areas. Once you have the data in the warehouse, you can rely on SAS software's integrated capabilities for data query and reporting, OLAP/multi-dimensional analysis, data visualization, presentation graphics, and more.

From front-to-back, SAS Institute provides the breadth of functionality necessary for successfully implementing a data warehouse. Our free data warehousing blueprint explains it all...see page C for details.



SAS Institute Inc.
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IBM eases Windows-to-OS/2 port

By Lisa Picarille
NEW ORLEANS

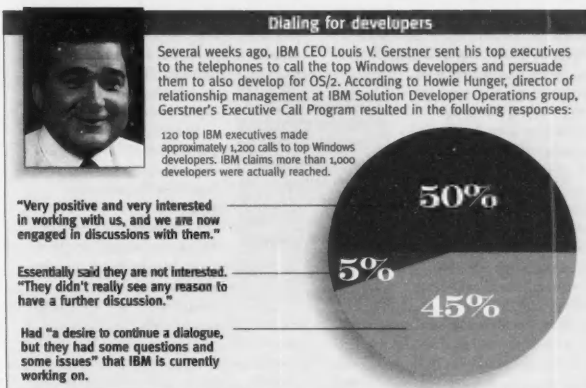
Attempting to help itself by helping others, IBM recently announced marketing and technical initiatives designed to help developers easily and quickly get their software onto the OS/2 platform.

The announcements, made at the IBM Technical Interchange conference held in the Big Easy, reinforced how the company's repeated efforts to attract developers to its OS/2 operating system have been anything but easy.

A breakthrough came with IBM's promise to release a set of application programming interfaces (API) that will ease the porting of Windows applications to OS/2. This set of APIs, called Developer API Extensions, will be available to OS/2 developers in August and will be included in a future version of OS/2.

The Developer API Extensions let Windows developers reuse about 80% of the code from their Windows products when they create OS/2 versions of applications. The remaining 20% of the APIs needed to move to OS/2 must be programmed specifically for OS/2. Using these APIs reduces development time by several months, an IBM spokesman said.

To create these APIs, IBM worked with Lotus Development Corp. in Cambridge,



Mass., to identify the most commonly used Windows APIs and isolate the 700 calls that are similar between Windows and OS/2.

IBM also licensed a tool from OneUp Corp. in Dallas that automatically converts 16- or 32-bit Windows code to OS/Warp code. Called the Source Migration Analysis Reporting Toolset, the product analyzes the scope of the conversion effort and indicates to developers which parts of their Windows appli-

cation will use IBM's Developer API Extensions.

These tools make it straightforward for developers and gives them access to more than 9 million OS/2 users, said Wally Casey, director of marketing at IBM's Personal Software Products group.

IBM is also moving into the next stage with its Executive Call Program, an initiative spearheaded by Chief Executive Officer Louis V. Gerstner (see chart) to attract third-party developers.

Phase two is a 14- to 16-month program offering technical and marketing assistance for third-party developers. Some of the programs include a "Try and Buy" CD-ROM to be sold at retail locations, a direct-mail campaign to promote independent software vendors' products and assistance in creating a presence on the Internet, said Howie Hunger, director of relationship management at IBM Solution Developer Operations group.

Other IBM initiatives included the following:

- Released earlier this month, Warp Connect is aimed at users with peer-to-peer networking capabilities, remote access features and enhanced TCP/IP support for dial-up or LAN connections to the Internet and on-line services.
- IBM will take on Microsoft Corp.'s Windows NT Server later this year by delivering Warp Server, a combination of Warp and IBM LAN Server.
- IBM has signed a worldwide marketing deal with Raleigh, N.C., start-up Blue Orchard Software, Inc., a spin-off of Indelible Blue. Blue Orchard will be responsible for selling OS/2 applications into the channel under a newly created WarpWare logo. WarpWare aims to establish brand-name recognition at the retail level by grouping OS/2 consumer and small business products and identifying them under the WarpWare banner. IBM claims that more than 50% of OS/2 sales since Warp's introduction last November are in the home and consumer markets.

A quick roundup of Windows 95 news

It's official—sort of. **Microsoft will release Windows 95 on Aug. 24**, a company spokeswoman confirmed. The locale for the expected gala rollout, however, is still unknown.

Soon after the official release, Microsoft will provide regular updates to Windows 95. These will be available over The Microsoft Network or via a subscription service.

Not officially named yet, these so-called "tune-up packs" will enable Microsoft to ship new features as soon as they are ready, said Yusuf Mehdi, a product manager at Microsoft's Personal Systems division.

For example, that's how Microsoft will deliver the promised support for Novell's NetWare 4.1 NetWare Directory Services, a protocol stack for IBM 3270 and additional device drivers, Mehdi said.

Soon after Windows 95 ships, the company will ship Version 4.0 of Microsoft Money, said Leslie Koch, unit manager for personal finance software.

Despite the long-pending and now dead acquisition of Intuit and its product Quicken, Microsoft's commitment to the next version of Money never flagged, Koch said. "We always treated it as if we wanted to beat Quicken," she added.

The new version will look a little like the company's Encarta multimedia encyclopedia, with large graphical buttons and fewer drop-down menus. "It has the same kind of navigation model as Encarta," Koch said. "We've made the product more friendly." Money 4.0 will also put more emphasis on home banking and bill paying features.

—Stuart J. Johnston

NEC unveils servers for Windows NT

By Jaikumar Vijayan

For the immediate future, at least, servers based on Microsoft Corp.'s Windows NT operating system are playing catch-up to those based on other operating systems, according to analysts. Issues include a dearth of Windows NT networking software and development tools, among other things.

These concerns are not stopping vendors from introducing NT-based servers. NEC Technologies, Inc. in Buxboro, Mass., is the most recent player in this arena (see box at right).

A recent report from Gartner Group, Inc. in Stamford, Conn., predicts that NT servers will outsell Unix-based servers as early as 1996. Most of the demand for this class of server will come from networking and database applications in distributed server environments, the report said.

The report also said NT-based servers are unlikely to scale beyond two to four processors for the next 18 months. "NT scales well, but the application subsystem [such as RDBMSs] must be adapted to NT for scalability, which will take time," the report said.

Indeed, NT-based servers are still not displacing or matching traditional midrange system performance, said Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass.

"There are still major holes in systems and network management, in communications protocols and development tools," Kusnetzky said.

More accepting

Because of such concerns, NT servers are likely to find faster acceptance in areas "where there are no installed-base migration issues," said Ted Julian, editor of the "Gray Sheet," an industry newsletter in Framingham, Mass. These applications will include newer areas such as Internet servers, Julian said.

As NT boxes fight to make inroads, RISC boxes such as NEC's may find the going particularly tough, the Gartner report said.

"NT's success will be limited largely to Intel-based servers and superservers," the report said, because the bulk of NT's software applications will not be ported to RISC platforms and will be available only for Intel Corp. boxes.

Chipping away

Not all hardware vendors are betting on Intel horsepower to get them on the Windows NT bandwagon.

For instance, NEC announced a new quadprocessor NT server powered by Mips Technologies, Inc.'s 200-MHz VR 4400 RISC chip. The new NEC RISCserver 4200 is being positioned as a Windows NT platform for enterprise-level server applications.

NEC's RISCserver 4200:

Sample configurations and prices. Systems are based on Mips Technologies' 200-MHz VR 4400 chip.

Number of chips	RAM (M bytes)	Hard drive (G bytes)	Price
2	64	2	\$24,734
2	128	2	\$34,829
4	256	7	\$68,719

applications and will top the company's line of RISC-based symmetrical multiprocessor servers.

According to Tony Levy, NEC's director of product marketing, the new system, which integrates Microsoft's Windows NT Server and BackOffice, will give users "optimized" database transaction processing, document imaging and management and data analysis.

The company will also bundle Microsoft's SQL Server as well as document imaging and data analysis software on its high-end system. —Jaikumar Vijayan

1. Commentary

Nina Kawalek

Flextime optimizes help desk



Burnout is a fact of life on many help desks and call centers, but it doesn't have to be. Today's re-engineering techniques and the changing job market provide an easy, cost-effective cure. Start by looking for help desk personnel in the professional ranks.

Burnout can afflict representatives who answer users' calls on a full-time basis. In an effort to lessen stress, some companies assign help desk representatives multiple jobs such as hardware upkeep, technical writing and software

testing—in addition to phone duty. Unfortunately, the "multiple activity" approach results in inefficiency, inflated compensation and low staff utilization. Also, it's not very flattering to regard support reps as part of an "available staff pool" rather than as communications specialists. A better solution lies in applying basic re-engineering thinking.

A first step of re-engineering is to identify basic functions, goals and skills: Excellent telephone communication skills—efficiently provided in periods of substantially less than 40 hours per week—can improve employee morale and help desk performance. Help desk managers, therefore, should seek candidates with exceptional oral communication skills who would enjoy phone service 100% of the time and are available in limited time slices.

By contrast, hardware maintenance requires technical expertise and attention to detail. Technical writing requires communication skills, but not of an oral or interpersonal nature; clarity and brevity are key here. Testing requires attention to detail, virtually no communi-

cation skills and high problem-solving ability. Each of these skill sets is notably different from that of the help desk professional. In rotating help desk representatives through these jobs, management fails to leverage the representative's unique interpersonal skills and blocks

the recipient departments from hiring optimally skilled workers.

Varying work as a relief for help desk representatives isn't the answer; part-time scheduling is the solution.

With today's employer/employee relationship, part-time work has become respectable. Having weighed the personal costs

of full-time work in corporate America, many professionals have vowed to lead a more balanced life and are combining consulting, part-time work and early retirement.

Would you believe people of executive caliber would welcome part-time hourly work on a support hotline? Yes, it's true. Consultants like to smooth out their chargeable hours. Former executive parents spending time with their children welcome continued interaction with the

business world. Twenty hours per week or less on the help desk is just right for many emancipated professionals. And could you find more experience than your own company's retirees?

Part-time pluses

Hiring a part-time, flexible work force has advantages. First, burnout is eliminated. Second, 100% utilization is achievable because you can ask part-timers to work or not work depending on shift, day and seasonal call volumes. Third, total compensation costs for part-time help are as much as 40% less than for full-time workers because benefits, vacation and overtime are taken out of the equation.

Fire the full-time reps? No. But keep prescreened candidates ready: When voluntary attrition takes its course, fill each vacancy with two part-time reps. And if you use the help desk as a boot camp for other jobs, graduate all the plebes immediately. Otherwise you send the wrong message to the organization. Wake up. Software support, like any other specialty of the company, is a skilled profession.

Kawalek, a software company re-engineering specialist, can be reached at nmkawalek@aol.com.

Would you believe people of executive caliber would welcome part-time hourly work on a support hotline? Yes, it's true.

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The ones to look for in X term

*7 of 9 categories. **Units and revenues. International Data Corporation and X Business Group. ©1995 Hewlett-Packard Company

Desktop Computing

New Products

PowerQuest Corp. has introduced PartitionMagic for DOS and Windows.

According to the Orem, Utah, company, PartitionMagic lets users manage and reconfigure DOS and Windows hard drive partitions in minutes. Users can also visually shrink, expand and move hard disk partitions without destroying data.

PartitionMagic for OS/2 and DOS is also available.

PartitionMagic for DOS and Windows is available in a personal license package for two machines and a site license package. Pricing starts at \$99.

► **PowerQuest**
(801) 226-8977

Logicode Technology, Inc. has introduced the 14V14HV (internal) and the 14V14XV (external) voice-interactive fax/data modems.

According to the Camarillo, Calif., company, the 14V14 series incorporates data, fax and voice-mail capabilities.

The modems have autotdetect features that distinguish between incoming faxes and voice messages and can save and

play back messages for up to 999 individual users.

The 14V14HV modem costs \$159. The 14V14XV modem costs \$189.

► **Logicode Technology**
(805) 388-9000

QlikTech, Inc. has announced QlikView 1.3, a data access and analysis tool for Microsoft Corp.'s Windows 3.1 and Windows NT.

According to the Duxbury, Mass., company, QlikView 1.3 lets users find and track all associations among data from several sources without using indexes. Data can be loaded as flat files or accessed through Open Database Con-

nectivity. Users can also add data, including text, images, voice and videos.

QlikView 1.3 stores and displays only unique values in each record field. By highlighting a set of values in one field, the corresponding values in all other fields are highlighted.

QlikView 1.3 costs \$895.

► **QlikTech**
(617) 934-0229

Jetsoft Development Co. has announced Art-Scan Professional 3.55, a scanning software program.

According to the Cincinnati company, Art-Scan Professional 3.55 enhances the capabilities of image scanners with a va-

riety of image enhancement tools. It can reproduce color or black-and-white photographs, text and line art at any resolution from 50 to 9,600 dot/in.

Art-Scan Professional 3.55 offers line-art enhancement capabilities to enhance reproduction of logos, graphs and documents. It has a vector line art utility that lets users scan directly into EPS or vector-based files; resulting files can be opened in layout or drawing programs.

Art-Scan Professional 3.55 supports more than 100 scanners and is available in Macintosh and PC versions.

Art-Scan Professional 3.55 costs \$150.

► **Jetsoft Development**
(513) 528-8668

Another season, another Pentium

It's a sunny honeymoon for notebook vendors looking to make market whoopee with Intel Corp.'s new mobile Pentiums. Intel released a dual-volt 2.9V/3.3V 60/90-MHz Pentium and a dual-volt version of its 50/75-MHz Pentium.

Vendor	AST Research, Inc.	Dell Computer Corp.	Hewlett-Packard Co.	Toshiba America Information Systems, Inc.
	Irvine, Calif.	Austin, Texas	Palo Alto, Calif.	Irvine, Calif.
Product	Ascentia 950N	Latitude XPI	OmniBook 5000	Portege 610CT
Processor	50/75-MHz Pentium	60/90-MHz or 50/75-MHz Pentium (2.9V/3.3V)	60/90-MHz Pentium	60/90-MHz Pentium
RAM	8M bytes, expandable to 40M bytes	8M bytes, expandable to 40M bytes	8M bytes, expandable to 64M bytes	8M bytes, expandable to 40M bytes
Hard drive	500M, 810M or 1.2G bytes	340M, 520M, 810M or 1.2G bytes	1.2G bytes	720M bytes
Weight	6.4 pounds	6.2 pounds	7.2 pounds	4.8 pounds
Price	\$3,499 to \$5,499	\$2,999 to \$3,999	To be determined	\$4,649

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ORACLE[®] 7

Throughput in tpmC	1,410.62	1,275.30	*
Price/performance in \$/tpmC	\$497	\$685	*
90% response times	1.52 sec.	2.44 sec.	*

*Oracle has chosen not to publish TPC-C benchmark results for any platform.

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Horizons unleashes metering with a twist

Chargeback enables price-setting for resources

By Tim Ouellette

Horizons Technology, Inc. is shipping its NetWare LAN metering software with a chargeback feature.

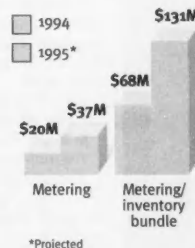
LANRecord 1.0, installed as a Novell, Inc. NetWare Loadable Module (NLM), meters and balances software licenses — both concurrent usage and server-based licenses — across multiple servers and LANs.

San Diego-based Horizons has included the chargeback feature to differentiate LANRecord from competing products. The chargeback feature lets administrators set prices for usage of network resources. Rates can be set for use of server-based applications, data files and software suites, along with network connections and storage.

LANRecord costs \$495 for the base server and \$295 for each additional server. It costs \$795 bundled with Horizons' LANauditor.

At Loral Conic TerraCom in San Diego,

The meter is running!
License metering software is expected to see healthy growth this year, but bundles of metering and inventory software are the hot growth area for the market



Source: International Data Corp., Framingham, Mass.

network administrator Tom Smith said he was not initially attracted to the idea of chargeback but has found a use for it: exporting the chargeback data to create usage reports for management. The reports, which display usage in monetary terms instead of in technical jargon such as CPU cycles, can help managers see how the network is actually being used.

"What goes on in the network and various computers is a mystery to management," Smith said. He sees chargeback only as an educational tool for buying decisions, not as a reason to bill various end-user departments at the defense electronics company.

Rick Villars, an analyst at International Data Corp. in Framingham, Mass., said he sees chargeback more as a product differentiator than a major user requirement. "It's not that everyone wants to start charging," Villars said.

But one user said he is concerned more with data files than with applications. **Chargeback, page 52**

Upgraded groupware to come from Novell

By Suruchi Mohan

If Novell, Inc. is able to deliver on time, its groupware strategy may well leapfrog that of rival Microsoft Corp.

Novell plans to release a client/server version of GroupWise, its file-sharing platform, in the first quarter of next year. Code-named Eclipse, it will be known as GroupWise XTD. It will offer many of the features and functions of collaborative computing — mail, workflow, calendaring/scheduling, task management and document management — sitting atop a well-integrated NetWare 4.1 directory.

"Eclipse gives Novell a client/server architecture not just for messaging but for all of information management," said Nina Burns, president of Creative Networks, Inc. in Palo Alto, Calif. "I really like the fact that they will be well integrated with NetWare Directory Services [NDS]. It is not something that Microsoft has achieved."

Microsoft's Exchange Server requires two directories and two management systems, both of which must be maintained, Burns said. Further, Novell boasts a powerful document management system — a package called SoftSolutions 4.1 — which the other messaging vendors lack.

Indeed, document management forms the basis of the information management

Novell's fully integrated document management, messaging and conferencing system, code-named Eclipse, is due by early 1996. It will provide the following:

- Communication management
- Information management
- Work management

piece of Eclipse. Information management lets users save, retrieve and file data. Users can pull together information from many different sources regardless of format or application.

Something old, something new

Eclipse's other pieces include communication management, a common desktop to access all the groupware functions and a common set of management and administration tools.

Communication management is an extended messaging capability that allows all kinds of communication to come together, said Bob Young, vice president of marketing at Novell in Orem, Utah. For example, sending a message from a computer to a pager would include the same steps as sending a message from one computer to another, he said.

For the common desktop, Novell espouses the not-so-new idea of the universal in-box. This means that all information — voice mail, electronic mail or fax — would appear in one box and be forwarded in the same way, Young said.

Finally, Eclipse will give network administrators the ability to manage their network from a central console using Nwadmin, the NetWare management tool. Eclipse will support Simple Network Management Protocol (SNMP)-based management so that any SNMP device can manage the network.

Despite all this, Jesse Morris, director of business and office systems at Centocor, Inc., a pharmaceutical company in Malvern, Pa., said he is still unsure what direction his company should take. On the one hand, he said, SoftSolutions and Inform — the forms routing product — are not very well integrated with GroupWise, so the promise of tighter integration with Eclipse is certainly welcome.

But on the other hand, he said, Centocor is not a NetWare shop. Centocor uses GroupWise for messaging. It would need NetWare to take advantage of other features, such as directory services.

"Integration with NDS may not be an issue or may be enough of an issue [for us] to change the [network operating system]," he said.

Sales force automation goes beyond technology

Study says access to corporate data is critical

By Mindy Blodgett

It can be painful, costly and time-consuming, but it is necessary for a profitable, successful sales force.

"It," in this case, is integrating the sales process into the enterprise. And it is necessary for companies to stay effective, according to a recent study.

Summit Strategies, Inc., the Boston-based consulting firm that conducted the study, said integration means arming the salesperson not just with a mobile computer but with access to important corporate data as well.

"Sales force automation — saying 'Here's a \$5,000 PC notebook' — is not enough," said James Greene, an analyst at Summit. "The opportunity for profits is much greater if you go at sales in terms of really connecting the corporation with the customer, through the sales force."

That is the philosophy at Nutmeg Mills, Inc. in Clearwater, Fla., a manufacturer of licensed sports apparel.

Right here, right now

Mark Beeghly, a systems analyst at Nutmeg Mills, said putting the company's 55-person sales force on Apple Computer, Inc. laptops saved the company money on paperwork, long-distance calls and copying costs and drastically reduced overnight mail charges. He was unable to provide a figure but said it was significant. But it was the type of information sent to the sales force that made the difference, he said.

"We used to FedEx them their account figures and commissions," Beeghly said. "Now we send it out via computer, and they check it every day. We are able to give them real information on inventory and shipping in real time, so they don't

waste time placing orders for things we don't have in stock. It has boosted morale."

Providing quick access to such vital information made it easy to persuade the sales force to rely heavily on their mobile computers, Beeghly said.

This is the kind of information needed to encourage a sales force, often full of highly competitive types accustomed to functioning as lone wolves, to act more as a team, observers said.

Nutmeg Mills' system, equipped with a color monitor perfect for showing customers logos and other illustrations, also helps sales people share information more easily while they are on the road. Sharing market information so quickly has made selling more efficient and productive, Beeghly said.

Ken Dulaney, an analyst at Gartner Group, Inc. in Santa Clara, Calif., said a study conducted by his company came

Automation, page 52

Workgroup Computing

New Products

Auspex Systems, Inc. has introduced the NS7000/100 NetServer, a Unix Network File System (NFS) server for localized workgroups.

According to the Santa Clara, Calif., company, the data server is based on a multiprocessing architecture that distributes the NFS workload to multiple

processors dedicated to network, file, storage and Unix system processes.

The NS7000/100 NetServer comprises two scalable models supporting from 15 to 50 users and from 8G to 90G bytes of disk storage.

The base configuration of the NS7000/100 NetServer costs \$59,950.

► **Auspex Systems**
(408) 986-2000

KOM, Inc. has introduced OptiServer for

Microsoft Corp.'s Windows NT, a software interface that supports a mix of optical drive sizes.

According to the Kanata, Ontario, company, OptiServer for Windows NT features dedicated magnetic caching for quick access to large volumes of data stored on optical storage peripherals. Its read caching reduces jukebox media swapping, and its write caching delays writes to media until all read requests have been processed.

OptiServer for Windows NT is an attached device driver and supports multiple SCSI devices and host adapters.

Pricing for OptiServer for Windows NT begins at \$1,500.

► **KOM**
(613) 599-7205

Maximum Computer Technologies, Inc. has announced DoubleVision for Character Terminals 2.0, remote control software for Unix systems.

According to the Kennesaw, Ga., company, the product lets a remote system connect to a host terminal and have full access to its screen and keyboard on a Unix system. Once attached, the remote keyboard operates the host terminal over a serial I/O board, modem or network. The remote access can be used in collaborative computing, network management activities, technical support, training and product demonstrations.

The product includes features for screen tracking, screen reviewing and activity logging. It lets multiple users view the same terminal simultaneously and is designed to work between disparate and proprietary terminals. Its mapping capability adapts to different terminal environments and reformats terminal screens.

DoubleVision for Character Terminals 2.0 costs \$395 per machine.

► **Maximum Computer Technologies**
(404) 428-5000

Crystal Computer Services, Inc. has introduced Crystal Info, a decision-support product for data access and analysis and information delivery.

According to the Vancouver, British Columbia, company, Crystal Info comprises an Information Desktop, Information Library and Information Management System.

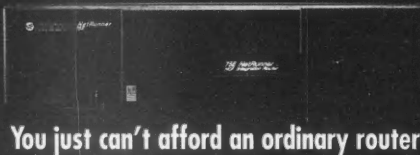
The Information Desktop lets users browse through a catalog of reports and queries and then delivers requested information to specific people at designated times. The Information Library simplifies data access, lets users design ad hoc queries and reports and supports several user groups. The Information Management System lets systems administrators process data, manage data access and manage user profiles.

Crystal Info's open architecture is designed to work over a LAN, WAN or via modem.

Pricing for Crystal Info starts at \$350 per seat.

► **Crystal Computer Services**
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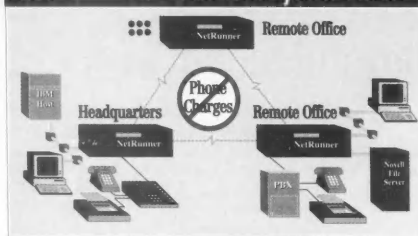
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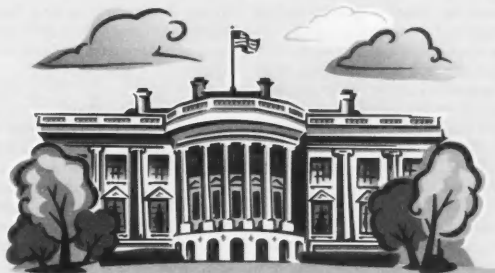
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Multipurpose servers take a backseat

Survey shows dedicated servers taking over backup task

By Steve Moore

Installing a dedicated server to handle data backups paid off handsomely in administrative cost savings for Lawrence Berkeley Laboratory, a U.S. Department of Energy research facility in Berkeley, Calif. The laboratory also uses dedicated servers for electronic mail, group scheduling and Oracle Corp. databases, but "the backup server was the one that paid off the fastest," said network administrator Roberto Morelli.

Start-up costs of about \$45,000 for a fault-tolerant Novell, Inc. NetWare serv-

could not be restored quickly, Morelli explained.

The laboratory's backup server reliably handles 20G bytes of data every night across "all of our Macintosh servers, Novell servers, a few PC clients and all of our Unix machines," even though it "runs 100% loaded 12 hours a day," Morelli said. Another server is still multipurpose.

Step aside

By 1997, dedicated backup servers will replace the multipurpose servers used today at many sites, according to a recent survey (see chart). "File servers are getting loaded with more activities, so it makes sense to push backup to a dedicated server," said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif., the consultancy that released the survey.

But while backups handled by dedicated servers are inherently more reliable than

to five file servers, he said. The use of multiple backup servers also helps prevent networks from bogging down, he added.

No central location

One company found a way to use a multipurpose backup server, not a dedicated one, and still kept its network clear. With nearly 50 servers to back up, many holding 80G bytes of data apiece, "it would be a major nightmare if I had all my data coming across the wire to a central location," said Larry Lemay, a network engineer at Computer Language Research (CLR), a corporate tax processing firm in Dallas.

CLR's solution was to use backup software from Palindrome Corp. in Naperville, Ill., and a dedicated 8mm or digital linear tape unit on each server. With Palindrome's incremental backup technology, "the volume of data we're backing up at any given time is not enough to flood the network," he said. "We're using a nondedicated server to back up multiple servers and are not having any problems whatsoever."

Still, Peterson advised, dedicated backup servers make sense for small to midsize organizations seeking to "consolidate data from lots of servers and workstations across multiple platforms." They also narrow the "window of risk" by doing backups more frequently, he said.

How servers are backed up

	Workstation ¹	Server ²	Backup server ³	Non-application ⁴
1991	80%	5%	0%	15%
1994	20%	65%	5%	10%
1997*	10%	32%	50%	8%

Base: 1,200 user sites surveyed on backup configuration

¹Backup runs on client workstations

²Backup runs on a multipurpose file server

³Backup runs on a single dedicated backup server

⁴Not using backup applications; backups handled via Unix commands and scripts

*Projected

Source: Strategic Research Corp., Santa Barbara, Calif.

er, Cheyenne Software, Inc. Arcserve backup software and tape drives were recovered within a year, he said. The savings came primarily from improved staff productivity. Productivity had suffered when multipurpose servers handling backups went down and data

those performed on multipurpose servers, users are well advised to invest in multiple dedicated servers because "one of anything will fail," Peterson said.

A safe rule of thumb to follow in large distributed computing environments is to have one backup server for every three

Automation

CONTINUED FROM PAGE 49

up with similar findings.

"We found that simply automating a sales force was a pretty dismal failure," Dulaney said. "You have to make the sales force feel like a business partner. By giving them information like their commission figures, you can begin to get them in the process of team selling."

Re-engineering a corporate culture to encourage teamwork can take time and cost money, Greene said. Companies should use technology such as groupware, which allows workers to share data easily between far-flung locations and time zones and facilitates workflow.

And finally, he said, using technology to complete sales tasks more tightly integrates the customer into the company through the salesperson, who has become more than just an order-taker. It is worth the trouble, Greene said.

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Standard	Vendors	Advantage	Suggested applications
Infrared	Hewlett-Packard, IBM	Easy and fast way to transfer data between computing devices	Portable-to-desktop data synchronization
Radio	RAM Mobile Data, ARDIS	Inexpensive (compared with cellular) for short messages	E-mail updates for notification of schedule and meeting changes
Cellular Digital Packet Data	McCaw Cellular, Bell Atlantic	Easy and fast way to transmit data over cellular lines	Transmission of updated sales call reports
Personal communications services	AT&T, Sprint	High-bandwidth network built from ground up for two-way wireless communications	To be determined

Source: Summit Strategies, Inc., Boston

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Chargeback

CONTINUED FROM PAGE 49

when it comes to chargeback. Khalifa Jallad, an information systems manager at the Maryland Office of Planning in Baltimore, said chargeback is a way to manage other state agencies' network access to the large number of data files his office maintains.

"Runtime applications are no big deal," Jallad said. "But with the data, as more people get connected in the state, [chargeback] will make a major difference."

On the metering side, Jallad said he now purchases software licenses for only half the number of users on the LAN;

then he follows the usage patterns to see whether more licenses are really needed.

LANrecord can be integrated with Horizons' LANauditor inventory software so that all network information gathered by LANauditor is immediately available when LANrecord is started. This saves configuration time for the administrator, according to Richard Brownrigg, senior product manager at Horizons.

Like products from competitors On Technology, Inc., Symantec Corp. and McAfee Associates, Inc., LANrecord cannot meter licenses for PC-resident applications. According to Villars, this is normal for the industry and has to do with the configuration of desktop systems. "Most of the time, server-based monitoring is satisfactory," he said.



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Finalists

This June, Apple Computer, *Computerworld* and MacIS will pay tribute to nine of the world's best enterprise software developers at the first annual Apple Enterprise Awards. Their innovative work has empowered individuals within corporations and institutions to accomplish more than ever before. So much more that we decided to honor them with an awards show of their very own. And after receiving submissions from around the globe, we're now proud to announce our twenty-seven finalists.

- Communication and Collaboration (Business, Education and Government):
 - Bergen Brunswick Corporation, *AccuSource*
 - Pacific Northwest Laboratory, *TWEAT: Ternary Waste Envelope Assessment Tool*
 - Trilogy, *Conquer's Data Capture* (The Industry Standard Computer Information System)
- Cross-Platform (Business, Education and Government):
 - The Naval Air Systems Command (Information Management Department), *Naval Aviation Wide Area Network (NAWAN)*
 - The Prudential Insurance Company of America, *The Member Services System (MSS), Version 4.50*
 - Walt Disney Pictures, *DISNEY "RADAR"*
- Departmental/Workgroup Client/Server:
 - Alex, Brown & Sons Incorporated, *Alex, Brown Trading System (ABS Trading System)*
 - Lockheed Missiles & Space Co., Inc., *1515 Machine 2.0.1*
 - Northwest Airlines, Inc., *Aircraft Situation Display*
- Education/Government Client/Server:
 - San Joaquin Delta College, *System 2000*
 - University College Dublin, *WEST (Web Educational Support Tools) 1.0*
 - University of Texas at Austin, *UTX Image View Client and UTX NW Image Server 1.0*
- Enterprise Client/Server:
 - Control Data Systems, Inc., *Control Data Advisor*
 - Dartmouth-Hitchcock Medical Center, *MaccIS*
 - Northrop Grumman Corporation, *Integrated Graphics Communication System (IGCS) 2.016*
- Mobile Computing (Business, Education and Government):
 - Centric Systems Corporation, *The Mortgage Market*
 - Medical Support Services, Inc., *Clin/Prak 1.0*
 - Zimmer, Inc., *Zimmer Information Console (ZIC) Associate Tool LLI*
- Multimedia Kiosk (Business):
 - Andersen Windows, Inc., *The Andersen Window of Knowledge System*
 - Booz Allen & Hamilton Inc., *Knowledge On-Line Kiosk 1.0*
 - MacTraining, *LinkIt! 2.1*
- Multimedia Kiosk (Education and Government):
 - City of Longview, Washington, USA, *Get in Touch*
 - Honoka'a High School, *"Instant Interactive" 1.0*
 - Penn State University, *Penn State Alumni Association Information Kiosk 1.0*
- Publishing (Business, Education and Government):
 - Second Look Computing of the University of Iowa, *Arachnid 1.0*
 - United States Surgical Corporation, *Suture Label Approval Software (SLAS)*
 - University of Pennsylvania, *Penn Printout Online*

Winners will be announced at a ceremony during the PC EXPO in New York, June 20-22, 1995. Winning applications will be announced by Michael Spindler, Apple's president and CEO, and showcased in a special supplement in *Computerworld*.

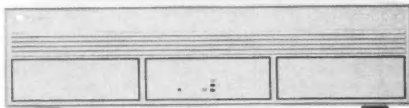
Please help us honor some of the best software developers in the world and call 1-800-396-6877 to get your complimentary tickets to the awards show, or come see the Apple Enterprise Awards booth. And join us here in the Big Apple.



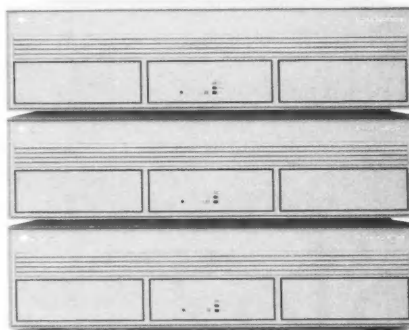
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New laws sought for info warfare

As technology outpaces the law, military experts debate the definition of an 'act of war' in the information age

By Gary H. Anthes
WASHINGTON

■ "In wartime, truth is so precious that she should always be attended by a bodyguard of lies," Winston Churchill said in 1943.

The term "information warfare" may be new, but its importance was well understood 50 years ago, when Allied commanders manipulated the truth to the ultimate devastation of German forces during and after D-Day.

But despite a long understanding of the role of knowledge in warfare, the military "doctrine" that guides our armed forces is woefully outdated for the information age.

Sneak attack

"Our whole defense doctrine has been based on the assumption that the enemy does not come into the U.S.; we have not had an invasion since 1812," said Paul A. Strassmann, visiting professor of information warfare at the National Defense University (NDU) here. "But now, any two-bit dictator can invade us electronically and do great damage with virtual impunity."

Not only is the U.S. ill-prepared for such attacks, but it also lacks the legal and policy framework for dealing with them, Strassmann said.

Although each of the military services is updating its military doctrine, information warfare raises hard questions, legal and military experts say. For example, in an electronic environment, when does war begin? How does one measure damage and define victory? Does a

malicious probe of a U.S. computer system warrant a quid pro quo response or a traditional combat response? Who decides to deploy offensive information weapons? Would a systems attack by the U.S. require congressional approval?

"If someone brings down the Federal Reserve System electronically, is that an act of war?" Strassmann asked. "There would be a great deal of debate about that."

"The area is so new. What is an act of war in the information age? No where is that defined," agreed military historian Daniel T. Kuehl, a professor at the School of Information Warfare and Strategy at NDU. "Has the technology outpaced existing laws? Of course."

The U.S. Air Force is finding its move to a new doctrine a difficult one, said Gen. Ronald R. Fogelman, Air Force chief of staff. "Because exploiting [information systems] will readily cross international borders, we must be cognizant of what the law allows and will not allow," he said. "We must have good legal advice as we get into this."

Legal limits

U.S. defense and intelligence agencies operate under a legal framework that makes it difficult to mount a coordinated response to an information warfare attack. The U.S. Department of Defense is critically dependent on civilian telephone and air traffic control systems, for example, yet it is prevented from intervening in civilian matters.

Similarly, the Central Intelligence Agency may deal only with matters outside the U.S.,



Air Force Gen. Ronald R. Fogelman: 'We must have good legal advice as we get into this'

while the Federal Bureau of Investigation is limited to internal affairs.

Strassmann said he supports legislation recently sponsored by Sen. William Cohen (R-Maine) that would establish the position of chief information officer of the U.S., and he is lobbying to have Cohen's bill specify "information security" as a key part of the CIO's responsibility.

"We need a comprehensive legal framework to protect information systems," said Adm. William O. Studeman, deputy director of the CIA, in a recent speech. "[We need] hacker prosecution laws, [a] better definition of computer crime and an examination of the legal basis for [an] appropriate government role in protecting information systems."

Enemy territory

Information warfare consists of actions taken to:



- Gain and use information about the enemy.



- Deny, corrupt or destroy the enemy's data.



- Protect U.S. data and systems.

— Gen. Ronald R. Fogelman, U.S. Air Force chief of staff

Information under siege

Military expert Paul A. Strassmann said, "The United States has been under attack since last June." He declined to elaborate.

"To attack the United States, you do not attack its airfields; you attack its information systems," Strassmann said. "And you just hire the criminal element to do it for you. It only takes four to six guys, such as ex-KGB agents."

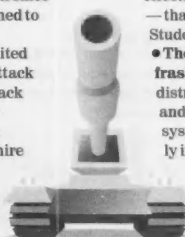
Deputy Director of the CIA William O. Studeman said targets could include the following:

- The morale and psyche of the U.S. public: "Subversion or denial of service might be more effective — and cheaper — than destruction," Studeman said.

- The information infrastructure: power distribution, telephone and banking systems; systems of strategically important companies; and high-tech databases.

"Massive networking makes the U.S. the world's most vulnerable target for information warfare," Studeman said.

— Gary H. Anthes



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Unix-based software package connects E-mail systems

By Suruchi Mohan

■ **Isocor in Santa Monica, Calif., recently announced client/server, Unix-based software that connects disparate mail systems and provides access to the Internet.**

The software is called the Scalable Isoplex Message Server 1.0. Like all switching devices that translate messages from one system to another, Isoplex supports a number of systems, including IBM's Profs and Digital Equipment Corp.'s All-In-1. These systems, however, are not supported natively; they require a gateway to connect to Isoplex. Eventually, the company plans to support Profs natively, but it does not plan that support for All-In-1.

Isocor is also working with AT&T Corp. to provide an X.500 connection, enabling administrators to use Isoplex as a central directory for all their mail systems.

"It will be a super switch for translation and routing," said Jim Boswell, president of One Communications Corp., a consulting firm in Pleasanton, Calif. He added that the software will be significant only for large enterprises and organizations that handle large volumes of messages at high speeds, such as the regional Bell operating companies.

Faster than a speeding message

David Knight, vice president of marketing at Isocor, touts speed as the biggest selling point, claiming that Isoplex can handle 743 messages, up to 1K byte in length, per second.

Not only is speed important, but the size of messages is also a key factor. With the ever-increasing popularity of electronic mail, users are sending larger attachments. These attachments can clog the slower links that connect the different messaging servers. Isocor's offering allows administrators to connect all their messaging servers to Isoplex, which speeds up message delivery.

Additionally, if an application is compliant with Microsoft Corp.'s Messaging Application Programming Interface, it can talk directly to Isoplex instead of going through the local server. This is analogous to dialing a person's direct telephone line rather than being patched through a central switchboard.

Isoplex was designed for multiprocessor machines. In its initial release, it will work with Sequent Computer Systems, Inc.'s SMP Symmetry 5000/SE20, symmetrical multiprocessor machines with six Intel Corp. Pentium chips. The company plans to port Isoplex to Hewlett-Packard Co.'s HP-UX and Microsoft's Windows NT later this year.

But at an average cost of \$250,000, the entry point for the product is high. Hardware costs are an additional \$440,000.

Jim Brandenburg, owner of Messaging Concepts, a value-added reseller in Houston, agreed that the cost of entry is very high. Brandenburg said he plans to implement the Isoplex software on AT&T machines to see if he can get the same performance as the software running on Sequent.

Isoplex will be available in the third quarter.

E
MAIL

Stackable hubs

Xyplex beefs up data security

By Laura DiDio

Xyplex, Inc., a Raytheon company, has enhanced its 3100 family of stackable hubs with data security features that allow network administrators to restrict access and lock out would-be intruders.

The latest Access Security and Eavesdrop Security features for the 3100 stackable hubs provide businesses with scalability across networks with as few as 16 ports to large networks with as many as 336 ports, said Erv Johnson, media and switching product manager at the Littleton, Mass.-based company.

The Access Security feature lets network managers restrict port connections to individual network devices based on physical Ethernet media access control addresses.

This capability effectively locks out unauthorized users by comparing the incoming source address to a predefined address with security clearance, Johnson said. "If the two Ethernet addresses don't match, the port is automatically disabled, and the intruder is denied access," Johnson said.

The Eavesdrop Security feature ensures data protection by allowing data to be transmitted only to authorized destination addresses and users on the LAN, Johnson said.

Networks without eavesdropping protection are vulnerable to unauthorized sniffers or listening devices that can attach to any available port, Johnson explained.

The Xyplex 3100 family of stackable hubs that is equipped with the new security features is shipping now.



Family affair

The Xyplex 3100 family of Simple Network Management Protocol-managed, 10Base-T stackable hubs has been shipping since the fourth quarter of 1993. The 3130 model is equipped with 16 ports and costs \$1,990. The 3140 model has 24 ports and lists for \$2,390.

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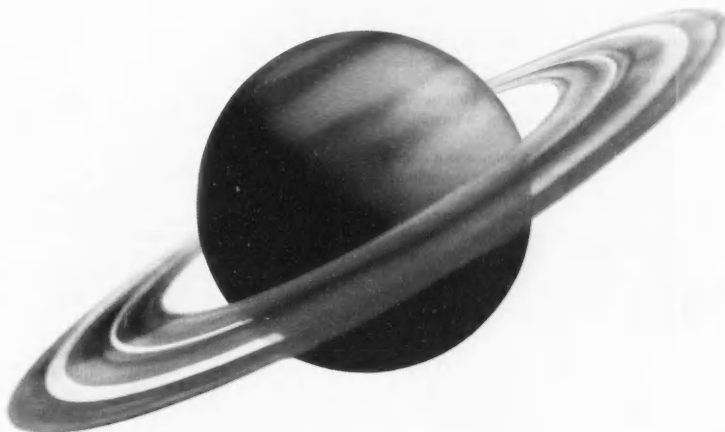
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Unix/Web server combo debuts

By Neal Weinberg

Linux, the Unix-like darling of students and World-Wide Web surfers, takes a major step toward respectability this week when Caldera, Inc. ships its first product.

The Orem, Utah-based start-up, backed by former Novell, Inc. Chief Executive Officer Ray Noorda, has started taking orders for the preview version of Caldera Network Desktop for Internet Access.

The product bundles the Linux freeware operating system with other features to provide a commercial-strength Web server.

Mark Bolzern, an analyst and president of WorkGroup Solutions, Inc. in Aurora, Calif., said Caldera will bring Linux to a new group of users by providing a graphical desktop interface. "It's an ease-of-use issue," he said.

He added that most of the commercial implementations of Linux are based on Internet access, which is appropriate because Linux was developed on the Internet by volunteers.

Caldera's product "sounds pretty good," said Stephanie Gilgut, co-principal at Wiz

Vax Communications in Troy, N.Y. Her company uses Linux to run an Internet access provider that has more than 200 users.

Gilgut said Linux has multiuser, multitasking capabilities that allow hundreds of users to reach the Internet through one PC.

According to Bolzern, hundreds of companies that provide Internet access for a monthly fee are springing up across the country.

Linux, but better

Brian Rice, a member of the technical staff at K Computing, Inc. in Raleigh, N.C., which markets computer training, says Linux has been "our point of contact on the Internet." Rice said the basic Linux operating system has been "pretty bulletproof," and with Caldera, users get "a nice GUI to sit on top of it."

As Caldera refines and adds features to the software, "that's going to be ultimately an interesting product," Rice said.

Mark Komarinski, a writer for "The Linux Journal," said Caldera "shows a lot of potential." He said "one of the things lacking so far has been the real backing of a company that people can call for technical support."

He said smaller companies provide many of the features that Caldera offers, but none have the Noorda name behind them.

A number of scattered companies market Linux on CD-ROM or sell complete hardware/software packages, but Caldera offers to become the central repository for Linux-based technical support.

The preview release of Caldera Network Desktop for Internet will be followed by a more complete version this fall, said Ransom Love, vice president of marketing at Caldera.

What's it got?

Caldera Network Desktop

- Linux operating system
- Full-featured GUI
- Built-in networking for the Internet
- Full-featured Novell NetWare client
- 32-bit Windows API
- Price: \$29 plus \$10 shipping and handling

On-line pay per view

Helping IS stay above the copyright law

By Mitch Betts

The hot trend in "business intelligence" is to glean news reports from on-line services and the Internet, then compile them in an electronic newsletter distributed on the corporate network to dozens of managers and employees.

In a recent *Computerworld* ethics survey of 255 information systems professionals, 72% of respondents said they should be able to download on-line news articles and share them with as many people as they want.

The only problem is that, well, that's illegal.

Although the law is not crystal clear, copyright experts generally say that downloading an article for personal research is "fair use," but distributing copies to dozens of colleagues is not.

"The technical ability to make copies is a little ahead of the administrative tools to enable honest people to do it right," said Barry Weiss, a partner at the law firm Gordon & Glickson in Chicago. One problem is the hassle factor of tracking down the copyright holders for payment.

The good news is that some technical solutions are emerging:

• The pioneer is Knight-Ridder Information, Inc.'s Dialog information service in Mountain View,

Calif., which has a copyright-compliance service called Dialog ERA. Users enter a command stating how many copies they want to redistribute or archive and are billed on a sliding scale. Dialog forwards the royalties to the participating content providers.

• The Copyright Clearinghouse Center (CCC) in Danvers, Mass., and Electronic Publishing Re-

sources, Inc. (EPR) in Sunnyvale, Calif., have teamed up to address the copyright problem in so-called "information commerce." CCC will act as a digital rights clearinghouse, while EPR will provide

software that encrypts the information in an electronic envelope called the DigiBox. Users get free software that unlocks the DigiBox and allows them to view the information.

• The Intellectual Property Licensing Agency, Inc. in North Little Rock, Ark., last month claimed it will be "the Internet's first copyright protection agency" when it begins beta-testing this month. Authors register their works with the agency and get royalties each time the works are viewed, or Internet service providers can get a blanket license and bill users.

Fifty-six percent of the IS professionals surveyed by *Computerworld* said they would pay for on-line articles if a royalty scheme were available.



Videoconferencing utility hits the big time

White Pine to market CU-SeeMe software

By Ellis Booker

■ From his Macintosh in New York, a Cornell University graduate student talks with a friend in Atlanta, who repositions his monitor-mounted video camera to show the traffic along 13th Street.

Both locations are using CU-SeeMe, a software-based videoconferencing utility developed at Cornell University in 1993 and freely available on the Internet. Last month, Cornell announced an exclusive master licensing agreement with White Pine Software, Inc., which will create a low-cost, commercialized version of the technology.

White Pine officials say their commercial product, available later this year at a starting price of \$99, will include enhancements such as color, improved audio fidelity, interactive whiteboard and application sharing. White Pine also plans to release application program-

Strategic alliance

AT&T and Apple late last month announced plans to add Apple's QuickTime videoconferencing technology and desktop collaboration tools to AT&T's WorldWorx Network Services. The alliance means QuickTime users will be able to connect to non-Apple systems. Apple expects to ship its first QuickTime systems in the third quarter.

ming interfaces for developers.

CU-SeeMe supports both point-to-point "video phone" calls and multiparty videoconferencing using a common server component.

"We expect users to demand commercial-quality software as they did with Eudora E-mail and the Mosaic Web browser," said White Pine President Howard Berke.

Videoconferencing analysts said the commercial version of CU-SeeMe will face plenty of competition from established desktop videoconferencing products from the likes of Intel Corp., AT&T Corp. and Apple Computer, Inc. These packaged products, which do not work across TCP/IP networks and require dedicated or virtual switched networks such as Integrated Services Digital Network, are priced from \$1,500 to \$2,500.

"CU-SeeMe has an opportunity for [supporting] ad hoc teams," said Christine Perey, an independent consultant and writer specializing in multimedia applications. Using the Internet to transport video, Perey noted, is cheaper than dedicated links; the trade-off is there are no



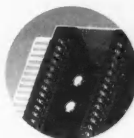
CU-SeeMe will include enhancements such as color and improved audio fidelity

guarantees about the level of service for picture quality. Another downside of video systems such as CU-SeeMe is that they are not part of the ITU H.320 protocols for networked videoconferencing.

Elliot Gould, president of TeleSpan Publishing Corp. in Altadena, Calif., which tracks the conferencing market, agrees that the non-support of H.320 and the crude image quality will cause most corporate customers to look elsewhere.



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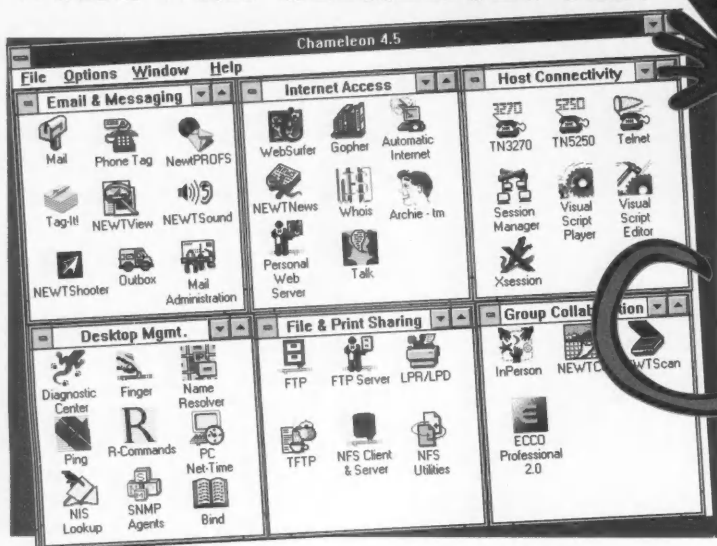


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New Products

Emulex Network Systems Corp. has announced NetQue Pro 2, a print-sharing device featuring three printer/plotter ports.

According to the Costa Mesa, Calif., company, NetQue Pro 2 lets Ethernet network users, running under a variety of operating systems, share the same printers and plotters. It is a stand-alone, external printer server featuring two bidirectional parallel ports and a single high-speed serial port.

NetQue Pro 2 supports network operating systems such as Novell, Inc.'s NetWare and Apple Computer, Inc.'s EtherTalk. It also supports IBM's LAN Server and Microsoft Corp.'s LAN Manager.

NetQue Pro 2 costs \$599.

► **Emulex Network Systems**
(714) 662-5600

Compatible Systems Corp. has announced the RISC Router 4000S.

According to the Boulder, Colo., company, the RISC Router 4000S combines Ethernet switching speeds with subnetting benefits of multiprotocol routing. It features four Ethernet ports with auto-switching connectors. The ports operate simultaneously at wire speed (14,800 packet/sec.) and let users control and segment their network traffic.

The RISC Router 4000S supports full routing of TCP/IP, IPX, Apple Computer, Inc.'s AppleTalk and Digital Equipment Corp.'s DECnet network protocols. It also provides Spanning Tree bridging for other network protocols.

The RISC Router 4000S costs \$3,495.

► **Compatible Systems**
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Technologic, Inc. has released Interceptor Firewall 1.1, network security software.

According to the Atlanta company, Interceptor Firewall 1.1 provides a single path for data between a corporate network and the global Internet. It allows corporate users to access Internet services and prevents unauthorized outside users from entering the network. The product includes network access control, proxy services and mail forwarding.

Interceptor Firewall 1.1 runs on a dedicated host processor that functions completely as a network safeguard.

Pricing for Interceptor Firewall 1.1 begins at \$17,250.

► **Technologic**
(404) 843-9111

Creative Assistance Software has announced CapWatch 1.0, an OS/2 LAN server utility.

According to the Charlotte, N.C., company, CapWatch 1.0 lets administrators track server utilization against network configurations. It provides real-time graphing of the use, logs of the data, graph capture and redisplay and configuration of alarm and alert levels.

CapWatch 1.0 can be operated locally on the server without generating net-

work traffic or remotely across the LAN from any OS/2 workstation.

CapWatch 1.0 costs \$129.

► **Creative Assistance Software**
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SoftArc, Inc. has introduced FirstClass Fax Gateway 2.0 for Macintosh.

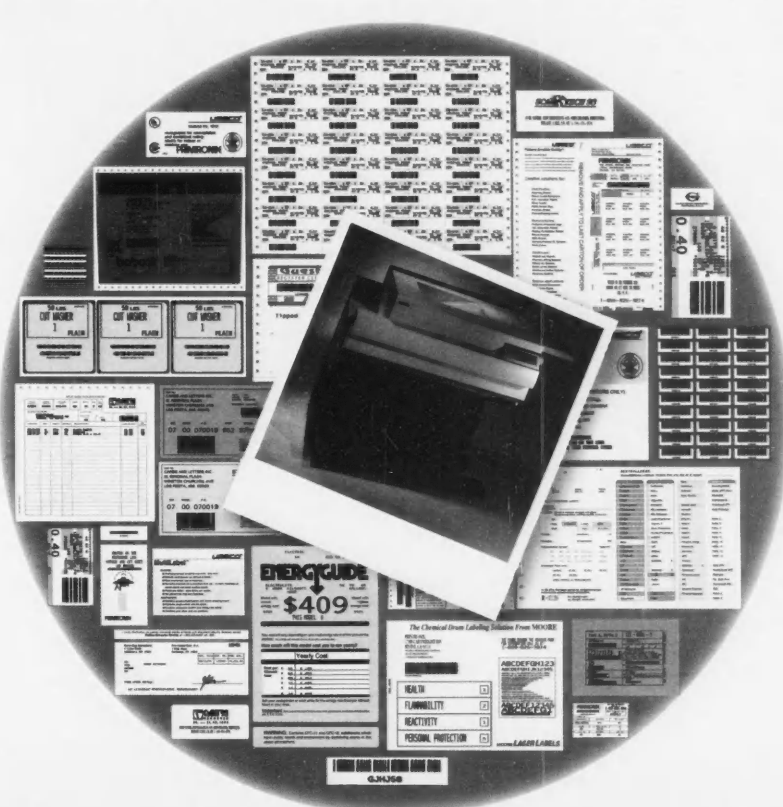
According to the Markham, Ontario, company, FirstClass Fax Gateway 2.0 for Macintosh lets SoftArc FirstClass users fax messages, text files and graphics to

any fax destination.

FirstClass Fax Gateway 2.0 features grayscale fax capabilities, multihop name resolution and a console display of gateway status. It was designed to run on a dedicated Macintosh — with a minimum of 4M bytes of available RAM — along with a fax modem and a phone line.

FirstClass Fax Gateway 2.0 for Macintosh costs \$495.

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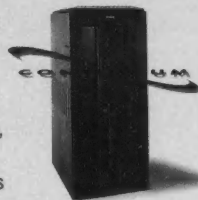
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Necessity is the mother of invention

Cluster of Unix workstations taps power of desktops, replaces costly supercomputers

By Jean S. Bozman

The network can be the computer after all. Three universities plan to prove that this summer as they lash clusters of Unix workstations together into a multi-site "meta-computer."

This massive cluster of Unix workstations, which will link desktops at the universities of Pennsylvania, Maryland and Illinois, is a giant proof-of-concept for meta-computers. Meta-computers are systems that live on the network and tap the memory, CPU and storage resources of individual computers.

Called the National Scalable Cluster Project (NSCP), the effort corrals the power of low-cost desktops and Asynchronous Transfer Mode (ATM) networks as an alternative to buying costly supercomputers or massive parallel machines.

"It's a computer system where the parts are geographically spread out, and yet we're trying to make it look as if they're all in the same room," said NSCP project director Robert Hollebeck, a physics professor at the University of Pennsylvania.

All eyes watching

If the project works, information systems managers at large corporations and government agencies will take note. Analysts said that despite the NSCP's emphasis on scientific computing applications, it could end up pushing many re-

source-hungry data-mining applications out onto enterprise networks. The project is already searching terabytes of physics data for patterns, calculating computational fluid dynamics problems and testing a multimedia video server.

"Any large corporation with large amounts of distributed data could benefit from this technology," said NSCP co-director Bob Grossman, a mathematics and computer science professor at the University of Illinois at Chicago.

Jim Swanson, vice president of distributed operations at CS First Boston's fixed-income trading unit in New

York, said his group already uses a home-grown load-sharing module called Scavenger to "scavenge" cycles from idle workstations for on-the-fly calculations.

"Any large corporation with large amounts of distributed data could benefit from this technology."

—Bob Grossman,
NSCP co-director

Problem solved

But NSCP's use of ATM and object-management software gets

around bottlenecks in network computing, Swanson said. "We're using Ethernet. They're using ATM," he said. "They can afford to send large pieces of data between the workstations because they have more bandwidth."

The two-year effort, funded with a \$4 million National Science Foundation grant it received last November, will enter its second phase this summer with the deployment

Meta-computer

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1 IBM SP2 MPE machine

ATM

Software environment:

- Middleware called the PTool persistent object storage management software
- Platform Computing's Load Sharing Facility job scheduler

Software applications:

- Multimedia video server
- On-line collaborative engineering data library
- Medical database
- High-energy physics applications and database

**University of Illinois
at Chicago**

12 IBM RS/6000 Unix workstations
12 Hewlett-Packard HP 9000
Series 700 workstations

**University of Maryland
at College Park**

16 RS/6000 Unix
workstations

IBM puts mainframe engine in PC server

By Craig Stedman

IBM has a message for customers still trying to scrape by with 1980s-era water-cooled System/390 mainframes: Buy a PC server, already.

The computer giant made that a viable option recently when it introduced a piece of pint-size iron bundled into one of its PS/2 servers. Due to ship next month, the server/mainframe combination uses a board-level System/390 processor based on IBM's new CMOS technology. Prices start at less than \$100,000 (see chart).

The new PC Server 500 S/390 offers only about 2 MIPS of mainframe processing power, and its I/O throughput is limited compared with a stand-alone System/390 box, analysts said. Nonetheless, the hybrid is viewed as a worthy cut-rate platform for off-loading application development and some low-end or distributed processing from big, water-cooled mainframes.

Quick return

Carolina Steel Corp., a steel manufacturer and distributor in Greensboro, N.C., said it expects an immediate payback from switching to a leased 500 S/390 server from an old 4381 mainframe. "I can just throw the current hardware away, and I'd still be saving money," said Charles Rice, corporate manager of information systems at the company.

Power, cooling and maintenance costs should all drop significantly, and getting rid of the 4381 and its attached 3380 disk subsystems will reduce the amount of floor space needed, Rice said. The new box "is going to sit in my PC room with the other servers," he said. "It'll be just another server on the rack."

Carolina Steel has been testing the 500 S/390 and planned to put the system into production for its 200 CICS users last week. During the testing, performance was similar to the 4381 on I/O-intensive applications and was faster than the water-cooled box on other jobs, Rice said.

Mike Kahn, an analyst at The Clipper Group, Inc., a consultancy in Wellesley, Mass., said the 500 S/390 "chokes if you have many people using it heavily with a relational database." For example, IBM guidelines indicate that the machine can handle only 25 or so MVS application developers at one time, he said.

But the hybrid system could be useful even in large shops that want to

Mainframe in a box

IBM's PC server/mainframe hybrid includes the following features:

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Processor: CMOS-based System/390 chip
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PC SERVER

Processor: 90-MHz Pentium
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Internal disk capacity: 38G bytes
Operating system: OS/2 Warp with Communications Manager/2

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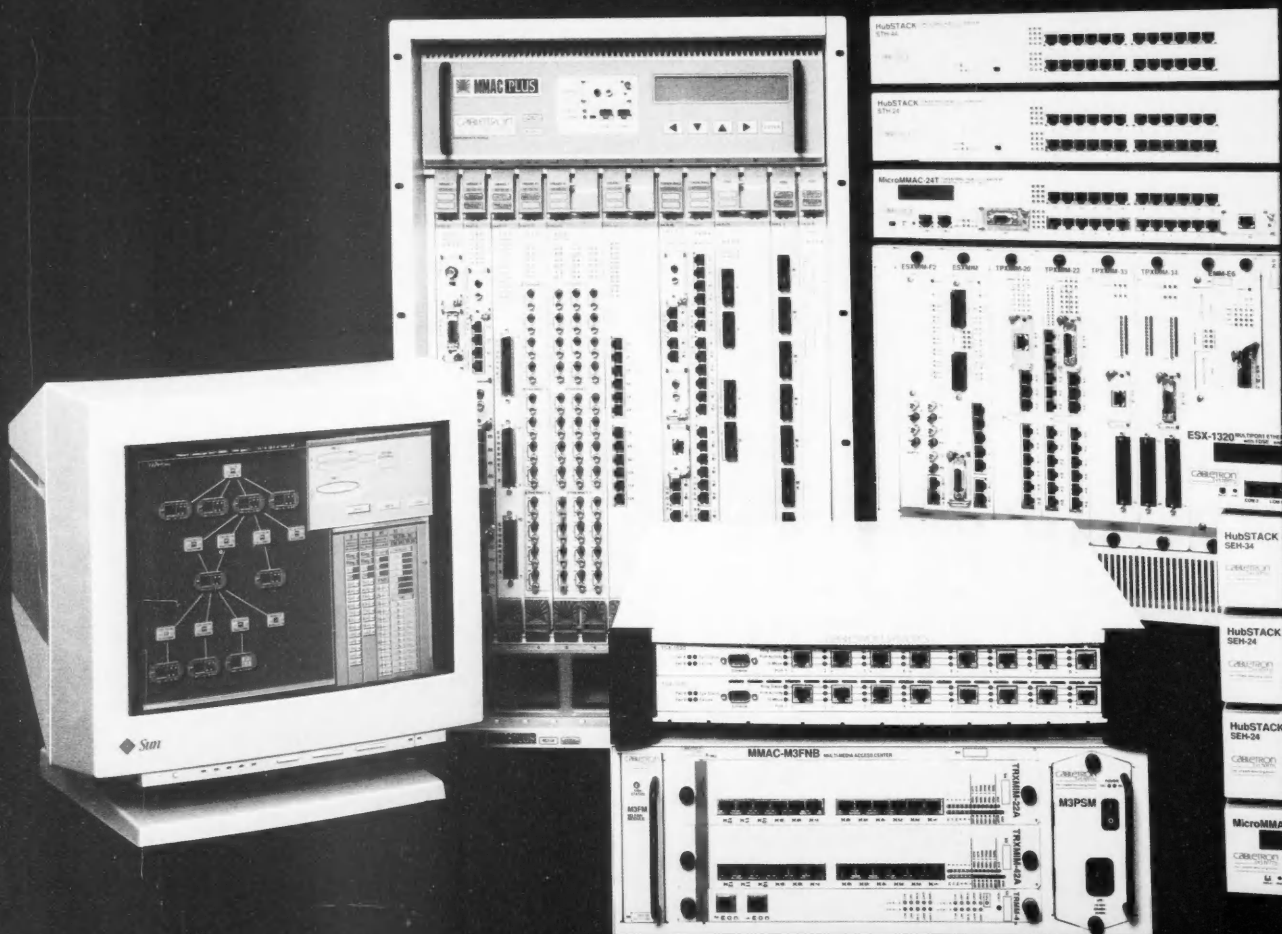
With MVS: \$85,000 to \$95,000
With VM or VSE: \$55,000 to \$65,000

distribute processing to branch offices or retail stores without going through the pain and cost of rewriting applications for another platform, Kahn added. "I expect to see some companies installing hundreds of these," he said.

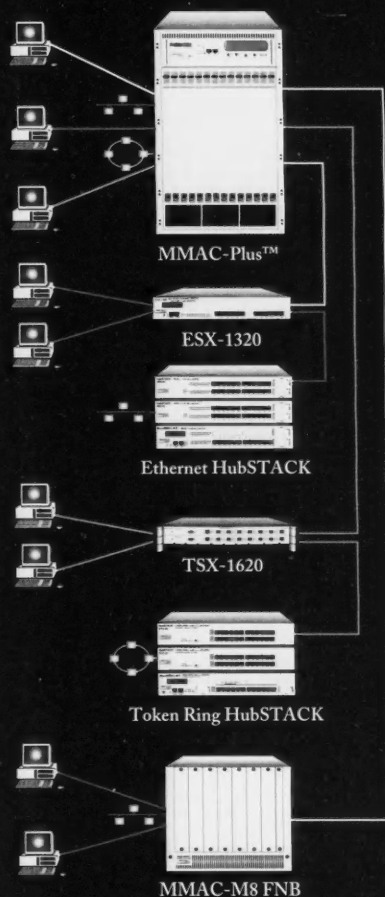
As part of its effort to secure the mainframe's place in the client/server world, IBM also hopes the 500 S/390 will help attract more software vendors to write System/390 applications. In the past, Unix developers have been scared off by the high cost of mainframe hardware, software and service bureau time.

But Charles Lickel, vice president of business plans and systems architecture at IBM's System/390 division in Poughkeepsie, N.Y., said software vendors can buy the 500 S/390 hardware for about \$12,500. IBM will then loan all the necessary software free of charge for up to 18 months to vendors that commit to delivering a System/390 application within that time frame, he added.

IBM PC server, page 68



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NEW PRODUCTS

Cognos Corp. has announced Impromptu 3.0, an enterprisewide, interactive database reporting tool.

According to the Burlington, Mass., company, Impromptu 3.0 gives database querying access to users at all levels of an enterprise. It can run queries in the background while working on other tasks, and it gives advance notice on report lengths and supports combination lists, crosstabs and graphs in one report.

Impromptu 3.0 features an object-oriented architecture that treats Impromptu's information catalogs as database-independent objects. It also includes database-independent templates designed to speed the deployment of report generation. It integrates with Windows as a Microsoft Corp. OLE 2.0 client and server.

Impromptu 3.0 costs \$495 for the user version and \$595 for the administrator version.

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Opera Systems, Inc. has introduced the MSS-128a, a mass storage server.

According to the Danvers, Mass., company, the MSS-128a is an integrated tape library server that provides up to 1T byte of storage capacity in 2 square feet. It uses Digital Equipment Corp.'s 233-MHz Alpha processor with 512K bytes of cache and up to 192M bytes of main memory.

The product supports as many as seven DDS-2 digital audio tape drives and up to six SCSI-2 disk drives.

The MSS-128a was designed for storage-intensive applications running under Digital's OpenVMS, Digital's Unix or Microsoft Corp.'s Windows NT.

Pricing begins at \$53,990 for the

built-to-order MSS-128a.

► **Opera Systems**
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XPoint Corp. has introduced FormsXpress 4.0, electronic forms design and printing software for the IBM AS/400.

According to the Norcross, Ga., company, FormsXpress 4.0 lets companies create and print single or multipart forms, checks, labels and other documents with advanced spool data mapping features.

The data mapping features include row line and field compression, unlimited conditioning and forms sorting.

FormsXpress 4.0 also supports color and thermal transfer printers and has faxing capability in conjunction with Quadrant Software's FastFax family of products.

Pricing for FormsXpress 4.0 starts at \$4,000.

► **XPoint**
(404) 446-2764

IBM PC server

CONTINUED FROM PAGE 65

Byron Vranas, director of enterprise systems at Software AG of North America, Inc. in Reston, Va., said the company has been paying \$40,000 to \$60,000 per month in mainframe software costs alone. Software AG, one of the leading mainframe application vendors, expects to do more than 90% of its development on the 500 S/390, Vra-

nas added. It is likely that only large-scale testing will still have to be done on a full-size mainframe.

Pricing unclear

One uncertainty is how software vendors will price their applications on the 500 S/390 because mainframe license and maintenance fees are usually tied to processor capacity and can cost millions of dollars. Vendors will "have to create a completely separate pricing structure for this box," said Eric Vaughan, president of

IntelliWare Systems, Inc. in Arlington, Texas.

Steve Harriman, vice president of marketing at Sterling Software, Inc.'s VM software division in Reston, Va., said Sterling's systems management products will cost about \$20,000 on the hybrid system.

The cost can approach \$500,000 on a water-cooled System/390, he added. Software AG will also price its offerings "in the tens of thousands of dollars" for the 500 S/390, Vranas said.

Cluster links universities

CONTINUED FROM PAGE 65

in mid-1996, will seek additional sites to join the project, Hollebeek said.

Outsiders will benefit, too, because the university users plan to release meta-computer middleware by late 1996. The project's PTool persistent object storage management software is already posted on the University of Illinois at Chicago's Internet home page for users to download (<http://www.lac.eecs.uic.edu/>). And IBM, Xerox Corp. and Platform Computing Corp. all support the project, each with an eye toward refining its distributed software products.

Prime partners

Prime business partners for the meta-computer cluster include the following companies: IBM, which is supplying and supporting new IBM RS/6000 workstations; Xerox, which is contributing collaborative engineering software; and Platform Computing, which supplies its Load Sharing Facility job scheduler for submitting batch jobs to distributed workstation arrays.

Waiting game?

Industry analysts said building a unified computer on a network is a laudable goal, but some are poking holes in the theory. Supercomputer watcher Gary Smaby, president of Smaby Group, Inc. in Minneapolis, likened the network to an old-fashioned telephone party line, where busy lines mean delays. However, Hollebeek said ATM protocols will dedicate bandwidth to allow priority jobs to get through.

Another foible could be system overhead in which CPUs waste cycles sending messages back and forth, said Christopher Willard, a senior analyst at International Data Corp. in Framingham, Mass.

But Hollebeek said applications such as data-mining, database requests and video-server image management lend themselves to parallel processing on the network.

If special software can overcome the possible performance hang-ups, then the meta-computer idea could thrive outside the laboratory. "If they can make it work, it will be a technical tour de force," Willard said.

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- Denver, CO - 6/6
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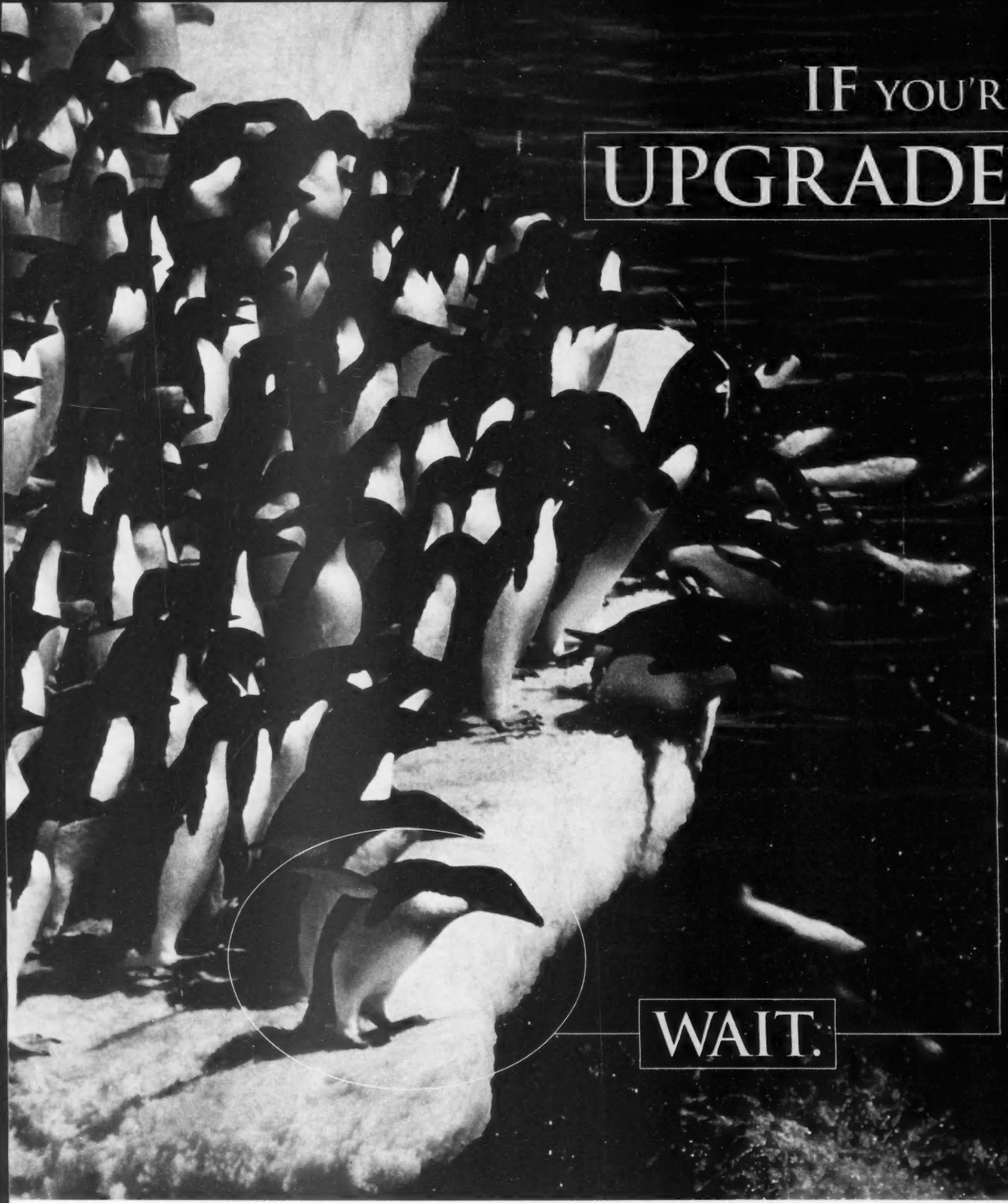
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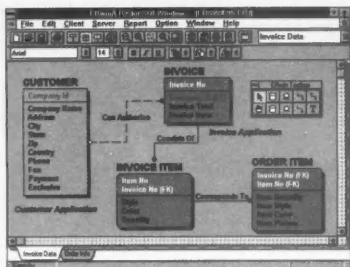
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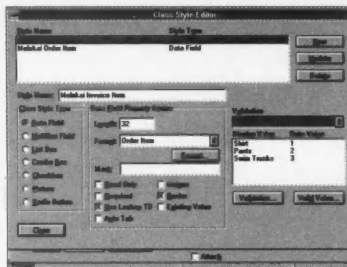
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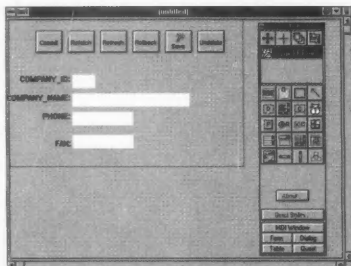


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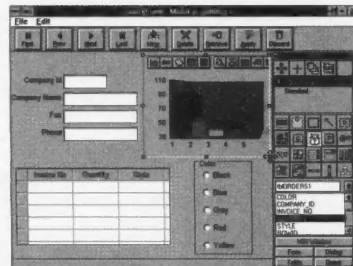


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SAP, D&B users await distributed capability

Client/server suites to deliver new functions by year's end

By Rosemary Cafasso

The ability to leap from centralized computing to truly distributed computing will become a reality later this year for client/server users of SAP AG and Dun & Bradstreet Software applications — as long as the vendors hold true to their promises.

In upcoming releases of their application suites both companies will take different approaches to deliver distributed functionality. But they will also rely on some similar technologies such as messaging services and remote procedure calls as well as provide support for database replication technologies. Such enhancements would enable users to cut ties to a central server database and allow them to install the application suite wherever it makes the most sense in their organizations.

That is good news for many users who said distributed capabilities are a requirement

for their long-term client/server plans.

"It's encouraging to see them moving in that direction," said John Christopher, director of information systems planning and financial systems at United Health-Care Corp. in Minneapolis and a D&B SmartStream user. "We

from running remotely, but they would be essentially cut off from the main database. And in the case of SAP, applications running on multiple servers would not automatically share data and function as an integrated suite.

With the distributed technology that the companies are

preparing, users could set up application modules and databases at different locations. Then users could replicate data from the central system to the remote system, and applications could exchange information.

"This is important for a global company because the network infrastructure [for a centralized system]

simply doesn't reach all parts of the world," said Mike Capellas, director of MIS at Schlumberger Ltd. in Houston. Schlumberger is currently installing SAP's R/3 client/server financial suite.

Talk is cheap

SAP has been talking about its distributed plans for about a year, with plans to ship tools before the end of 1995, whereas D&B Software just announced its strategy last month. Analysts said D&B Software is out in front in terms of the thoroughness of its approach.

"I don't think the [D&B Software] architecture is novel with respect to new technology," said Judy Hodges, an analyst at International Data Corp. in Framingham, Mass. "It's the implementation that is ahead of where the competition is."

The firm essentially designed SmartStream from the ground up to accommodate a distributed environment and will include such basics as a distributed workflow engine.

For now, at least, SAP is focusing on its Application Link Enabling (ALE) middleware. ALE is message-oriented middleware that sits as a layer on top of R/3 modules. It would let R/3 applications send messages to one another and exchange data (see story at left).

Two client/server application providers will soon provide distribution capabilities

Key technologies		Availability
SAP AG	SAP-developed middleware	Late 1995, with Release 3.0 of R/3
D&B Software	Workflow engine, distributor catalog, messaging services	Fourth quarter, with SmartStream Distributed Enterprise

see the advantages of scalability and [centralized] database independence as being very important to our long-term strategy."

Both vendors now provide client/server applications that rely on a centralized database approach. This does not preclude application modules

Chevron spreads its R/3 wings

Chevron Corp. in San Ramon, Calif., is one SAP AG user gearing up to distribute its R/3 client/server applications.

The company is working with an early version of SAP's ALE technology to enable the remote distribution of R/3 throughout several company locations. ALE, which is middleware that would allow R/3 applications to exchange data and information, is "one of our key initiatives for 1995," said Bob Washa, SAP technical manager in Chevron's advanced financial IS group.

With ALE, Washa said his team will be able to set up a master/slave R/3 configuration in which one master system will maintain R/3

data, and various R/3 subsystems will contain copies of it. ALE will manage updates from the remote sites to keep the master files current with any changes that take place in the field.

In addition, ALE will enable Chevron to split up R/3 application modules so financials can be run in certain locations, and other applications, such as plant management, can be run at various remote sites. With this configuration, ALE will enable the applications to share data and essentially function as an integrated suite.

Currently, all of the R/3 modules must be on the same server, working with the same database to achieve that integration.

—Rosemary Cafasso

Outsourcing

AT&T Solutions takes on broader service role

By Julia King

AT&T Solutions does not want to be your outsourcing vendor. Rather, the 3-month-old unit of the telecommunications giant wants to be your "technology life cycle management company."

There is a big difference between the two, according to AT&T Solutions President and Chief Executive Officer Victor E. Millar.

"We obviously are doing the traditional [information technology] infrastructure management — everything from mainframes through servers and down to desktops," Millar said in a recent interview.

"But we also are now moving upstream to managing the business applications that are being supported on the computer platforms," he added.

Top to bottom

For example, AT&T Solutions, based in Washington, will not only design and build

a network and computer systems to support a corporation's customer service call center. It will actually staff and run the entire operation on a day-to-day basis.

Analysts said this strategy is similar to that of other top vendors, including Electronic Data Systems Corp. and Andersen Consulting, which both emphasize their roles as business function outsourcing.

"Another stage in outsourcing is taking more and more nonvalue-added functions and moving them outside of a company," said Natasha Krol, an analyst at Meta

Group, Inc. in Stamford, Conn. "Companies are actually elevating outsourcing to a different level."

So far, AT&T Solutions has managed to snag several high-profile contracts, particularly in the banking sector. The Chase Manhattan Bank NA and Great Western Bank, the second-largest thrift institution in the U.S., are both customers.

So is First National Bank of Chicago, which contracted AT&T as its prime vendor shortly after the U.S. Treasury designated the bank as a financial agent for an electronic federal tax payment system.

Recently, AT&T also made inroads into the health care and transportation industries. In March, the company signed a deal with Equifax, the Atlanta-based consumer credit information company.

Transportation giant CSX Transportation, Inc. in Jacksonville, Fla., has also contracted with

AT&T Solutions. Together with AT&T Bell Laboratories, Millar's unit will design and manage a new telecommunications system. Terms of the 10-year, \$250 million deal call for CSX to convert entirely from its private analog microwave and fiber network to AT&T's public voice and digital network.

The design will allow CSX Transportation to take advantage of the intelligence in AT&T's network without diverting resources from its core rail operations, said John F. Andrews, president of CSX Technology, the railroad's information systems arm.



"We're in a position to take over virtually any part of a business function clients would like us to manage."

—Victor E. Millar, president and CEO, AT&T Solutions

Home alone?

One way AT&T Solutions is looking to distinguish itself from competitors is by focusing specifically on electronic commerce, said AT&T Solutions President and CEO Victor E. Millar.

Building networks and network-based applications to support widely dispersed workers — notably telecommuters

— is another key part of the unit's strategy, he added.

"If you look at the volume of [electronic commerce] transactions today, 95% are still internal to companies," Millar said. "But if working at home turns out to be as dramatic as I think, you're talking about your clients' people at home working with suppliers' people at home and customers' people at home. All of a sudden, you're talking about a huge network," he said.

—Julia King

Computerworld Editorial Calendar

July - September, 1995

Issue Dates			Ad Closings Color* B&W		Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
July 3	June 16	June 23			CW Guide To: PDAs Personal Digital Assistants, the latest evolution of microprocessor power in a small package, present unique buying options and support issues for IS organizations. This Guide will examine the leading products and tasks IS has in selecting and managing them. Buyers' Satisfaction Scorecard: Market leading PDAs Firing Line: Newest PDA from a leading vendor	
July 10	June 23	June 30			Closer Look: Unisys	Starch Study
July 17	June 30	July 7			CW Guide To: DBMS The focus of database management systems is as the server for a variety of applications. Depending on the application type, IS organizations face varied buying decisions. We will examine which databases match which application needs best and analyze the leading products in each area. Buyers' Satisfaction Scorecard: Market leading SQL database mgmt. systems for midrange servers Firing Line: Latest DBMS from a leading vendor	
July 24	July 7	July 14			Closer Look: Power Macintosh	Enterprise Computing Chicago 7/26 - 7/28
July 31	July 14	July 21			CW Guide To: Workgroup and Collaborative Software Beyond e-mail and document management users are seeking products that help them manage business processes and work as teams. This Guide will examine how well the vendors are meeting this need. Buyers' Satisfaction Scorecard: Market leading workgroup software Firing Line: Latest collaborative product from a leading vendor	
Aug.	June 28				Computerworld Client/Server Journal Vertical Market Focus: Insurance Section Feature: Product Focus on Networking	Object World Networks Expo Interop + Network Unix Expo
Aug. 7	July 21	July 28			Special Report: Re-engineering the Workplace	
Aug. 14	July 28	Aug. 4			CW Guide To: Desktop Databases Personal databases that act as front ends to company applications and DBMS, as well as PC-based packages that serve the needs of workgroups or departments will be examined with the focus on IS buying decisions. Buyers' Satisfaction Scorecard: Market leading desktop databases Firing Line: Latest DBMS from a leading vendor	Object World San Francisco 8/15 - 8/17
Aug. 21	Aug. 4	Aug. 11			Closer Look: Sun Workstations	
Aug. 28	Aug. 11	Aug. 18			CW Guide To: Client/Server Financial Applications One of the first applications companies move off of the mainframe is financials. But only recently have the vendors begun producing true client/server offerings. We'll look at how users like them and what more they need. Buyers' Satisfaction Scorecard: Market leading client/server financial software Firing Line: Latest client/server financial software from a leading vendor	Starch Study
Sept. 4	Aug. 18	Aug. 25			Special Report: Annual Salary Survey	
Sept. 11	Aug. 25	Sept. 1			CW Guide To: Internetworking Routers and Hubs Facing competition from many areas, routers and hub vendors are adding capabilities and repositioning themselves. How do these changes affect IS buying plans and what is the future internetworking product set? Buyers' Satisfaction Scorecard: Market leading hubs and routers. Firing Line: Latest hub or router from a leading vendor Custom Publication: Object Application Awards Supplement	Networks Expo Dallas 9/12 - 9/14
Sept. 18	Sept. 1	Sept. 8			Closer Look: Client/Server Manufacturing Software	
Sept. 25	Sept. 8	Sept. 15			CW Guide To: ATM Switches ATM is becoming more widely installed and product offerings are multiplying. What are the benefits and caveats of this new high-performance technology? Buyers' Satisfaction Scorecard: Market leading ATM switches Firing Line: Latest ATM software from a leading vendor Custom Publication: White Paper on The Business Case for Client/Server (part 3 of 4-part Enterprise Software Directions Series)	Interop + Network Atlanta 9/25 - 9/29 Unix Expo, New York City 9/26 - 9/28

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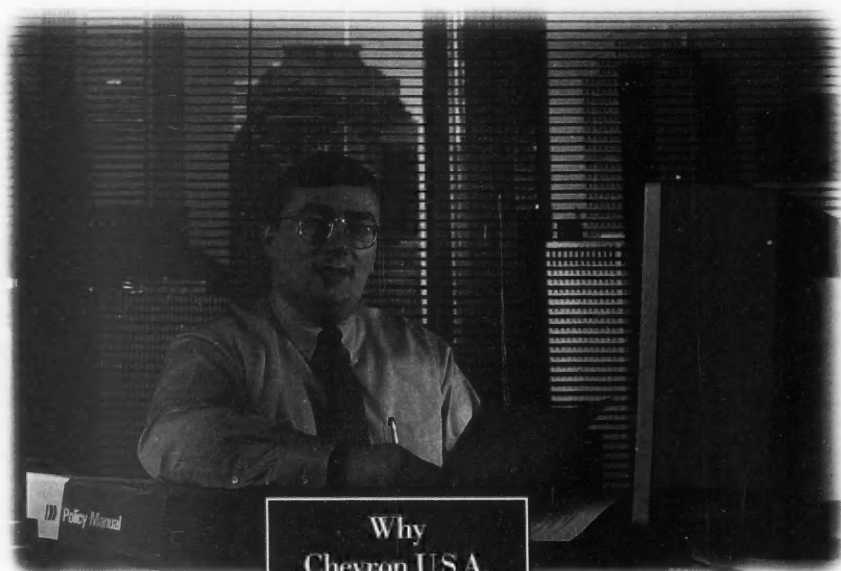
Computerworld Editorial Calendar

October - December, 1995

Issue Dates			Ad Closings Color* B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
Oct.	Aug.		23	Computerworld Client/Server Journal Vertical Market Focus: Transportation Section Feature: Product Focus on Database Tools	Software Developers' Conference SIM Fall Conference Harvey Study
Oct.	Sept.	Sept.	2 15 22	Closer Look: Lotus Custom Publication: White Paper on Manufacturing Technology: Managing for Change (part 3 of 4-part Manufacturing Series)	Software Developers Conference Washington, D.C. 10/3 - 10/7
Oct.	Sept.	Sept.	9 22 29	CW Guide To: Large Scale Servers Mainframes, massively parallel multi-processors and supercomputers have their place in large corporations where data and applications require enormous processing power. How do the leading products shape up in this category and how much flexibility do they offer IS? Buyers' Satisfaction Scorecard: Market leading large scale systems Firing Line: Latest large scale system from a leading vendor	
Oct.	Sept.	Oct.	16 29 6	Closer Look: ISDN Update/Frame Relay	Starch Study
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Oct.	Oct.	Oct.	30 13 20	Closer Look: PC Storage Special Issue: Campus Edition (mails 10/31)	
Nov.	Sept.		27	Computerworld Client/Server Journal Vertical Market Focus: Brokerage Section Feature: Product Focus on Development Tools	Comdex Fall Mobile World Client/Server World DB Expo Harvey Study
Nov.	Oct.	Oct.	6 20 27	CW Guide To: Object-oriented DBMS and Development Tools Is object-oriented the next wave in DBMS or is it an embedded technology that will gradually simply add functionality to present offerings? This question and how it affects IS buying decisions will be examined. Buyers' Satisfaction Scorecard: Market leading object-oriented DBMS Firing Line: Latest object-oriented DBMS from a leading vendor	Starch Study
Nov.	Oct.	Nov.	13 27 3	CW Guide To: Desktop PCs Pentium, PowerPC and other platforms will be examined with regard to the migration issues and performance gains they provide. Buyers' Satisfaction Scorecard: Market leading desktop PCs Firing Line: Latest desktop PC from a leading vendor	Comdex Fall Las Vegas 11/13 - 11/17
Nov.	Nov.	Nov.	20 3 10	Special Report: Electronic Commerce	
Nov.	Nov.	Nov.	27 10 17	Closer Look: Internet Browsers	Mobile World Boston 11/28 - 11/30
Dec.	Nov.	Nov.	4 17 22	Closer Look: Visual Development Tools Custom Publication: White Paper on Service Solutions for Client/Server (part 4 of 4-part Enterprise Software Directions Series)	Client/Server World Chicago 12/5 - 12/7 DB Expo New York City 12/5 - 12/7 Starch Study
Dec.	Nov.	Dec.	11 22 1	CW Guide To: Messaging Software and E-mail With e-mail going through a major architectural change to client/server, the market will have a very different shape. IS should be able to purchase products that better address company needs. Buyers' Satisfaction Scorecard: Market leading e-mail software Firing Line: Latest e-mail package from a leading vendor Custom Publication: White Paper on Manufacturing Acquisition Strategies: A Guide for User Empowerment (part 4 of 4-part Manufacturing Series)	
Dec.	Dec.	Dec.	18 1 8	Closer Look: Contact Management Tools	
Dec. 25 Jan. 2	Dec.	Dec.	8 15	Annual Forecast Issue (1996 issue)	

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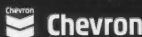
The Means to Make Better Decisions

Providing the means to deliver accurate and timely information to improve work processes and make better business decisions is the job of George Alameda, Chevron U.S.A. Production Company's Manager of Information Technology.

The company is using the SAS System to help with enterprise-wide information delivery. "Our mission is to make financial, operational, and reservoir data available in an easy-to-use format to all the asset teams at work in CUSA Production Co.," says Alameda. "We've found the SAS System is a superior solution for analyzing data, turning data into useful metrics, and guiding our cross-functional teams toward improved work processes."

One team, in CUSA Production's Western Business Unit, is tracking the profitability of individual wells. "It's a tremendously difficult task to optimize our field operations for maximum profitability," says Alameda. "With the SAS System, we can integrate large amounts of data and build a picture to compare one field against

Why
Chevron U.S.A.
Production
Company Relies
on the
SAS System



another and challenge our asset teams to identify and share best operating practices."

Reaching for the Best

Alameda looks forward to extending the use of the metrics and performance monitoring data to employees trying to improve their work processes. He admits his vision is far reaching, but so is the SAS System. "Our challenge is to be better than

the best," he concludes, "and the SAS System is helping us reach that goal."

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The object is access to relational data

By Elizabeth Heichler

While many application developers may be working in an increasingly object-oriented world, chances are good that the corporate data they need to access lives in a very different universe — a relational database.

To solve the problem caused by the mismatch between object-oriented applications and relational databases, users are turning to an array of different approaches (see chart). In recent weeks, two vendors have ridden into the breach, offering help through new functionality in their products.

Persistence Software, Inc. has announced Persistence 2.5, a new version of its object/relational interoperability software. The enhanced release will support multithreading features in SunSoft, Inc.'s Solaris operating system, which will improve performance — particularly for transaction processing applications, said Christopher Keene, president of Persistence in San Mateo, Calif.

A little competition

At the same time, Rogue Wave Software, Inc., the Corvallis, Ore., company known for its C++ class libraries, extended its DBtools.h++ library to add interoperability with The ASK Group, Inc. Ingres and Informix Software, Inc. databases. DBtools.h++ already provides interfaces to Oracle Corp.'s Oracle7, Sybase, Inc.'s Sybase and Microsoft Corp.'s SQL Server as well as an Open Database Connectivity (ODBC) interface.

"Object-relational enablers are critical because they allow you to buy new development tools and get the benefit of object-oriented programming and not throw out your relational databases," said Hugh Bishop, manager of

emerging technologies research at Aberdeen Group, Inc. in Boston.

Users could avoid this problem by using object-oriented databases with object-oriented applications. But information stored in relational databases can be made available to a wider variety of applications than object-oriented databases, according to users and analysts.

Persistence and Rogue Wave offer users two very different approaches, and which is most appropriate depends on the nature of the application being developed, said Bill Baloglu, chief technologist at Object Focus, Inc., a Cupertino, Calif., consulting firm specializing in object-relational connectivity.

If an application is likely to perform mostly ad hoc queries, then DBtools.h++ will offer the necessary functionality, he said. But if the application involves database navigation and the need to bring multiple tables into a client-side cache and navigate through them, then Persistence, which offers caching capability, is probably the better tool, Baloglu said.

AT&T Corp. in Kansas City, Kan., is using Persistence in an application that controls and manages the firm's inventory of long-distance network equipment, said Randy Ringeisen, a technical staff member. But its inventory database of choice was Sybase.

While Ringeisen's group could have hand-coded the interface between the object-oriented application and the relational database, it decided to look for an off-the-shelf solution to save time. Using Persistence software saved a significant amount of time on the project, perhaps as much as 30%, he said.

US Bank of Oregon in Portland chose to solve its object-to-relational problem with Rogue Wave's DBtools.h++ class library, said Mat Henshall, a consultant working at the bank who is employed by Computer People, Inc. The bank uses Microsoft's Visual C++ to write Windows-based front-end systems for its retail branch operations, but these applications will access relational databases through an ODBC driver.

Initially, the developers at US Bank used the Microsoft Foundation Classes library to build the link, but Henshall said they found it to be fragile and error-prone.

DBtools.h++ is priced from \$595; a full source code version costs roughly \$2,000.

Pricing varies for Persistence, but a spokeswoman said an average installation costs about \$40,000.

Getting the job done	
Different approaches to allowing object-oriented applications to access relational data	
Vendor/Product	Approach
Hewlett-Packard Co. Palo Alto, Calif. Adapter	Extends relational databases so they can store objects created by object-oriented applications.
Next Computer, Inc. Redwood City, Calif. Enterprise Objects Framework	Transforms rows in database tables into objects; developers define object classes from relational constructs.
Ontos, Inc. Burlington, Mass. Object Integration Server	Uses a shared repository to store the mappings between an object model and information in a data source. Applications use the repository at runtime to access information.
Persistence Software, Inc. San Mateo, Calif. Persistence	Maps business objects to relational databases.
Rogue Wave Software, Inc. Corvallis, Ore. DBtools.h++	Encapsulates relational constructs such as tables, rows and cursors as C++ objects with this C++ class library.

Oracle to ship warehouse database

Company offers users interim upgrade to Oracle7

By Kim S. Nash

Oracle Corp. plans to unveil this month a version of its database that has been partially redesigned to move beyond traditional transaction processing into the data warehousing market, company officials confirmed recently.

The product is part of an announcement planned for this month that will lay out Oracle's full warehousing strategy, said Steve Faris, senior director of server technologies at Oracle in Redwood Shores, Calif. The rollout would come several months behind rivals Informix Software, Inc. and Sybase, Inc., which have already launched warehousing plans and products.

Data warehouses — databases designed to hold key business information that end users can query, massage and analyze — are hot. Combined with increasingly more affordable parallel hardware that can rip through massive

amounts of data, users see warehouses as more valuable cousins of yesterday's decision-support systems.

Oracle's warehouse database, which is expected to ship by year's end, has been designed according to a so-called star architecture. In broad strokes, that means user queries will be shunted directly to and from data files instead of be-

ing pumped through shared memory and buffer caches as they are in the current Oracle7 structure, Faris explained.

The ultimate goal, he added, is to offer a single Oracle database for warehousing and traditional transaction processing. Administrators would configure parts of the database for different tasks.

Star features

The star architecture Oracle is working on is similar to that of warehouse specialist Red Brick Systems in Los Gatos, Calif. Informix relies on paralleling database tasks, while Sybase plans to mix parallel technology with a patent-pending indexing and data retrieval tool called IQ Accelerator. In the meantime, Oracle has responded to user demands for more efficient warehousing features via a new release of its flagship product, Oracle7 Release 7.2.

Early users said they like what they have seen so far.

Glenn Araujo, a senior consultant at Wells Fargo Bank NA, said query processing "is a lot faster now." Though he declined to cite figures, Araujo said Oracle has paralleled certain subtasks in reading, understanding and answering end-user requests (see chart).

The San Francisco-based bank has been testing Release 7.2 for a few months and plans to put it into production in a 200G-byte data warehousing application when it receives a final version of the database, Araujo said.

Release 7.2 shipped on Sequent Computer Systems, Inc. boxes last month, with support for other multiprocessing hardware to follow this quarter and next, Faris said.

The release includes several improved features, including Secure Network Services, a set of capabilities designed to erect more barriers between hackers and corporate data. Oracle Network Manager 3.0 is also part of Release 7.2; it is an upgrade designed to let administrators graphically manage and control Oracle databases connected to one another via SQLNet 2.0, Oracle's network protocol translator.

People are talking
A sample of observer comments reveal that early users are excited about new features in Oracle Release 7.2
On parallel tasks such as Select and Create Table: "Queries are a lot faster."
On automatically resized data files: "Increases on-line availability of the database [because] an administrator doesn't have to resize files manually."
On enhanced security: "We've been waiting for awhile on this."

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Novadigm synchronizes client/server deployment

By Steve Moore

Mainframe shops today are running headlong into a new client/server conundrum in which developing new applications can be easier than deploying them.

As software development cycles shrink, user organizations must synchronize their development and deployment processes. A new class of object-oriented systems management tools is emerging to meet that need.

The first such tool came not from one of the established network or systems management platform providers, but from Novadigm, Inc. in Mahwah, N.J. Users and analysts have hailed Novadigm's Enterprise Desktop Manager (EDM) as the first highly scalable, object-oriented tool for enterprisewide client/server configuration management and application deployment.

Novadigm first introduced EDM in 1993. With an enhanced version of the product shipping this month, and a new plan to attract third-party software developers, the company hopes to significantly exceed last year's \$10 million in annual sales.

The Novadigm Enablement Initiative aims to get developers to build software

objects — called EDM Adapters — that automate interaction between EDM and third-party products. Adapters are available or in development for products from IBM, Powersoft Corp., Lotus Development Corp., Novell, Inc., Microsoft Corp. and others. Novadigm claims its object-oriented adapters will allow third parties to integrate their software more closely with EDM than they can with competing platforms that are not object-oriented.

No contest

Users praised EDM's ability to streamline application deployment.

"Given the number of sites and the diversity of platforms we wanted to get to, there really wasn't any competition out there," said Laure Dau, a technical manager at Metropolitan Life Insurance Co. in Parsippany, N.J. MetLife also considered

Tivoli Systems, Inc.'s object-oriented Tivoli Management Environment but rejected it as "too beta" — or early in its maturity — compared with EDM at the time a decision was made, she added.

With nearly 20,000 desktop systems spread across 1,500 sites nationwide, MetLife needed a system capable of rapidly deploying newly written applications so that, for example, "you know the

next morning that 5,000 claims processors are all on the new code," she explained.

Analysts said EDM is best suited for large organizations with extensive in-house development projects or complex sets of packaged applications.

"Novadigm is trying to break down the wall between operations and development," said Jim Herman, a vice president at Northeast Consulting Resources, Inc. in Boston. EDM is espe-

cially useful for companies that are creating their own applications on a combination of mainframes, Unix servers, Microsoft's Windows NT Servers and desktops and then "synchronizing all that and getting new features or bug fixes out quickly," he added.

More work to be done

But streamlining application deployment does not necessarily make systems administrators' lives easier.

Using EDM "is really significantly increasing workloads for me and my staff because we're doing things we weren't doing before," said Beverly Loftus, technical services supervisor at Florida Power & Light Co. in Miami. The utility is developing many client/server applications, and "without this product we wouldn't be able to get them out," she said.

Because of EDM's growing popularity, users and analysts said Novadigm is experiencing growing pains and is struggling to maintain customer support services as its user base grows. In addition, "They need to either grow some new pieces or integrate with other tools to do things like license metering and remote control," Loftus said.

Enterprise Desktop Manager Novadigm, Inc., Mahwah, N.J.

Function:

Enterprisewide, object-oriented client/server application deployment and configuration management.

Platforms:

Central object repository and scheduling engine reside on an IBM MVS mainframe or an IBM, HP or Sun Unix system.

Distributed client and server platforms supported include Microsoft's Windows and Windows NT, Novell's NetWare, IBM's AIX, HP's HP-UX, Sun's SunOS, AT&T GIS' Unix, Macintosh, DOS and OS/2.

Pricing:

\$20,000 for enterprise server; clients start at \$100 each.



Behind one of these doors is the right development tool for building high performance client/server applications.

New Products

Cozzi Research has announced Visual RPG Development System 2.0, a Windows-based development platform for IBM's AS/400.

According to the Warrenville, Ill., company, this latest release lets users drag and drop AS/400 Data Definition Specification (DDS) screen components under

the Windows motif and then compile the generated DDS on the AS/400. It allows developers to use a WYSIWYG tool to edit source code and do screen layout simultaneously, which lets them view an AS/400 screen image while editing RPG code.

Visual RPG Development System 2.0 includes editing, screen layout, productivity and source code transfer features. A Screen Layout Utility is integrated with the product and is not a separate

add-on. This utility is one of the first Windows-based screen design tools for native AS/400 applications.

Visual RPG Development System 2.0 costs \$495.

► **Cozzi Research**
(708) 393-4474

Summit Software Co. has announced Summit BasicScript VBX 2.1.

According to the Jamesville, N.Y., company, Summit BasicScript VBX 2.1 is a set

of custom controls for adding scripting language to Microsoft Corp.'s Visual Basic and Borland International, Inc.'s Delphi 95 application.

Summit BasicScript VBX 2.1 features an editor control, a script control and an extension control.

The editor control lets users customize applications by writing and modifying scripts. The script control lets developers organize Summit BasicScript VBX 2.1 procedures into separate scripts. The extension control lets users extend the BasicScript language with objects, methods, properties and keywords.

Summit BasicScript VBX 2.1 costs \$495.

► **Summit Software**
(315) 445-9000

Reasoning Systems, Inc. has introduced Refine/Cobol, a re-engineering workbench for Cobol systems.

According to the Palo Alto, Calif., company, Refine/Cobol is a graphical workbench that maintains, improves and re-engineers Cobol systems. It lets users understand code structure, generate documentation, analyze changes, assess code quality and export design information to computer-aided software engineering tools.

Refine/Cobol comes with a re-engineering application programming interface for adding customized capabilities.

A Refine/Cobol license costs \$11,900.

► **Reasoning Systems**
(415) 494-6201

Software Productivity Research, Inc. has unveiled Checkpoint 2.3, a knowledge-based tool for managing software development.

According to the Burlington, Mass., company, Checkpoint 2.3 helps users estimate project parameters such as scheduling, required effort, costs and quality. It has a template feature that lets users augment the programmed knowledge base with data from their projects.

Checkpoint 2.3 is compatible with other project management tools such as Microsoft Corp.'s Project, Applied Business Technology Corp.'s Project Workbench and Digital Tools' AutoPlan II.

Users can establish project plans in Checkpoint and then export this information into the next-step management tool.

Pricing for Checkpoint 2.3 starts at \$5,000.

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Singapore Airlines moves into intelligent systems

By Tong Ying

Singapore Airlines is turning to an artificial intelligence-based system that will manage the company's flight crew scheduling and handle disruptions to the crew rosters.

The project, called the Integrated Crew Management System (ICMS), is scheduled to be implemented in stages during the next two years and is being developed by ICL's Airlines Group. ICMS consists of three modules—a roster assignment module for cockpit crew and one for the cabin crew and a crew tracking module. The core components of the system are written in C and interface to Oracle Corp.'s database. It will run on Unix servers, be based on a client/server architecture and interface with the airline's main corporate main-frame systems.

"The first two modules will automate the tracking and scheduling of the flight crew's timetable," said Philip Watson, project manager of ICL's Airlines Group.

The Cockpit Crew Roster System will be implemented at the end of the year, while the Cabin Crew Roster System is ex-

pected to go live sometime early next year.

"With this system, the crew schedulers will have access to a powerful [graphical user interface] to manage crew rosters more effectively than the existing system," Watson said.



Singapore Airlines has an extensive network of destinations and aircraft, which include the following:

- **Route network:** 71 cities, 40 countries.
- **Aircraft fleet:** 31 B747-400, 13 B747-200/300, 23 A310-200/300 and 1 B737-300.
- **Crew strength:** 1,150 cockpit crew, 5,300 cabin crew.

The third module will track the positions of the crew and include an intelligent system that handles crew pattern disruptions.

For example, crews will need to be rearranged if one member falls ill while in a foreign port. "The system has to work out where a backup can be found in order to prevent understaffing on the scheduled flight," said Matthew Johnson, software designer on the team of developers for the Singapore Airlines system.

"As a result, people would be switched from the crew team, which might be scheduled for a later flight," Johnson said. "The intelligent system will then check from its crew roster and database to determine the best way to reschedule the different crew members' rosters to accommodate the sick person. Should the need arise, another person will be flown in from the base port to replace the absent crew until he or she recovers."

This crew disruption handling module will be integrated with the crew tracking system. It will provide decision-support capabilities in real time, according to Lim Cheng Wee, crew systems manager at Singapore Airlines' flight operations division.

"It is believed that currently no other airline has such a system in operation," Watson said. Usually, a system such as this costs between \$1.1 million to \$4.3 million, depending on the airline's requirements, he added.

Ying writes for *Computerworld Singapore*.

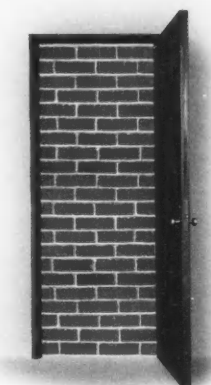
From experience

Normally, when the airline receives disruptive news such as flight delays or crew unavailability, the crew control department makes a decision based on its experience.

But ICL's intelligent flight disruption handling system gathers the expertise of experienced professionals and stores this knowledge in a computer database instead.

If a potentially disruptive situation occurs, the intelligent system automatically draws upon the knowledge stored in the database and advises the best course of action. This might mean repositioning the crew or calling in backup staff.

"Basically, intelligent systems are powerful due to their ability to mimic human nature and the learning process," said Philip Treleaven a professor at the University College of London.



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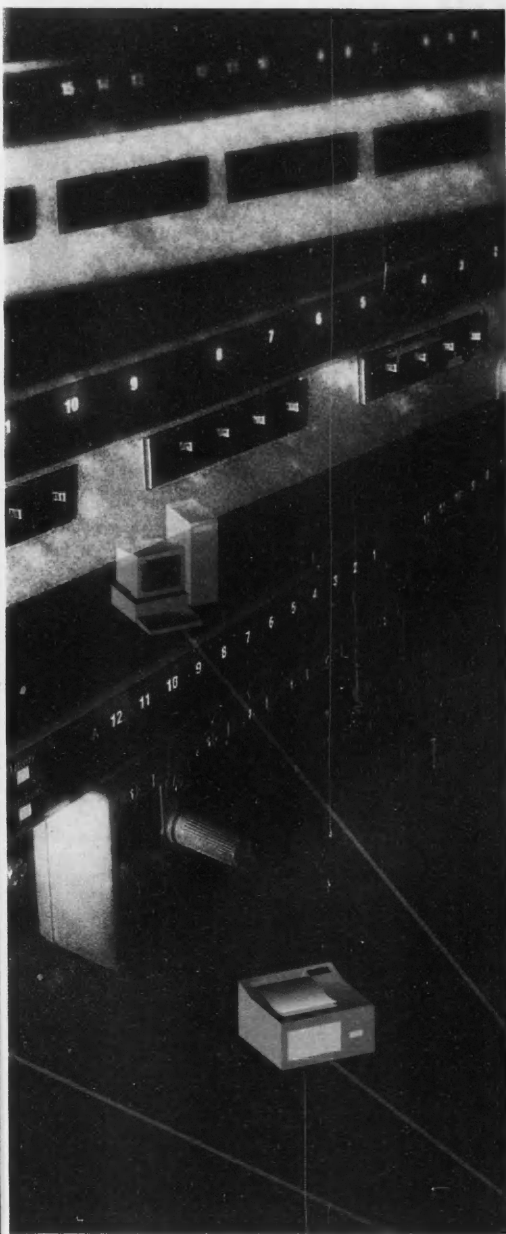
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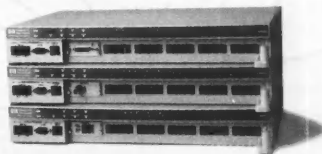
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Smarten up!

What is knowledge?

Data is raw numbers and facts.

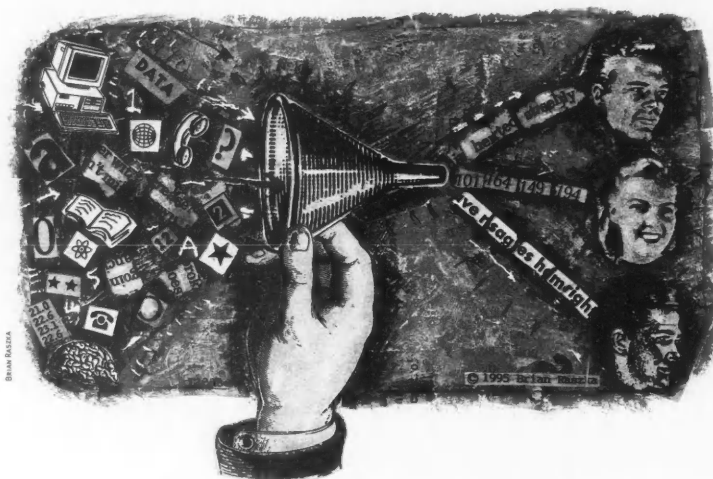
Information is processed data.

Knowledge is information made actionable.

STORY LINE:

GM, Fidelity, Monsanto, and other leading companies are learning how to tap their own brain power. Organizational and technical hurdles may cripple the knowledge management movement, but if this trend pays off, backers say IS can look forward to building innovative applications and attaining a new corporate role.

'Knowledge management' may offer new hope for IS. But making it work is hardly a no-brainer. BY JOSEPH MAGLITTA



Want a future in information systems? A growing flock of big companies, consultants and academicians (including demigod Peter F. Drucker) say that managing "knowledge" could help many IS groups change their image from turkey to owl.

"A lot of the value of the corporation is in the minds of employees," says Leif Edvinsson, Skandia Group Insurance Corp.'s first director of intellectual capital in Stockholm. Corporate knowledge, skills, experience and business processes, as well as information stores and systems, become more valuable when shared via global networks, he says.

And boosters of "knowledge management" say that helping companies turn gray matter into greenbacks should be the next frontier for beleaguered IS pros. Supporters assert that becoming "chief knowl-

edge officers" or managers could help some IS groups gain or regain organizational stature.

"If they don't do this," warns Laurence Prusak, an Ernst & Young consultant in Boston and major promoter of the concept, "IS will become the sort of people who do the back-office integration of the telephone."

Scare tactics? Trend of the Month? Before you reject the idea, consider: General Motors Corp., Fidelity, Inc., Ford Motor Co., Monsanto Corp., Dow Chemical Corp., Hallmark, G. E. Lighting, Hewlett-Packard Co., AT&T Corp., IBM and a growing number of other leading firms are taking the infant discipline of knowledge management very seriously. Each is working to improve how they acquire, share and use knowledge in their organizations. In each case, IS plays a key leadership or support role.

The basic idea is this: Companies must gather, cultivate and manage intellectual capital as carefully as they do financial capital. Leverage knowledge, the thinking goes, and you can reduce time to market, cut research and development costs and boost productivity.

But that can only happen if a company's intellectual assets—for information, know-how and understanding about customers, competitors, markets, processes and people—is freed from the computers, brains, libraries and file cabinets where it's now trapped.

That's where IS comes in, Prusak says. He and colleagues Christopher Gopal and Thomas H. Davenport, a University of Texas professor and Ernst & Young fellow, says IS's systemic thinking, technology know-how and experience working with many departments can be the perfect background for knowledge management.

Visions vary, but most agree that duties include the following:

- Mapping knowledge and information resources both on-line and off-line.
- Serving as a "knowledge champion" who obtains funding and sets policies.

"If they don't do this, IS will become the sort of people who do the back-office integration of the telephone."

— Laurence Prusak
Ernst & Young

to create a branch office from 24 months to six. The prototype contains all the information, business processes and technology required to open and run an office.

Today, sister company American Skandia continues to roll out a sophisticated broker support system called Assess (see box below).

Four years ago, General Motors began looking at new ways to ensure that new models reflected what buyers wanted, says Vincent Barabba, GM's CIO and knowledge guru based in Warren, Mich.

"If you spend \$500 million to develop and introduce a new vehicle only to find out it doesn't meet customer requirements, that's a very expensive lesson," Barabba says.

So starting with the 1993 Chevrolet Camaro and Pontiac Firebird models, GM began seeking ways to provide engineers and designers with as much high quality intelligence on buyers as possible. A major goal: get cars out the door quickly, before buying tastes changed.

Among other things, GM created a dynamic computer model that simulates customer reactions to various vehicle concepts and alternatives.

Barabba credits the huge success of the Chevy Blazer and GMC Jimmy in part to the application of underused knowledge about customers' buying habits. Ultimately, he says, better management and use of knowledge have helped GM avoid costly mistakes.

"If you sat down with a vehicle program team just Smarten up!, page 86

• Training, guiding and equipping users with knowledge access tools.

• Building "knowledge networks" and "knowledge infrastructures."

• Monitoring outside news and information.

It's more than theory. Take Stockholm-based Skandia Corp., a multinational financial services and insurance company.

Four years ago, Skandia used its knowledge about how to set up and manage its offices to create a system that slashes the time needed

Knowledge basics

Q: What exactly is knowledge management?

A: It's the emerging discipline of systematically and actively managing and leveraging the vast stores of knowledge and information that exist in a typical company. "Knowledge" refers to systems, processes and know-how.

Q: Why are companies doing it?

A: Reasons differ. But in general, they're trying to take advantage of untapped, unconnected expertise to speed production, boost sales, improve customer service, etc.

Q: How does it affect IS?

A: Depending on the organization and culture, technology groups lead knowledge management efforts or play an integral role as enabler. Some backers say knowledge management offers a promising, natural next stage of evolution for many IS groups.

Q: Sounds like another buzzword. Is it for real?

A: Yes. Growing numbers in business and academia say knowledge management will become increasingly important as corporations continue to flatten and the economy shifts toward information-based businesses.

Q: Are any real companies doing it?

A: Yes, dozens of large corporations around the world. They include General Motors, AT&T, IBM, Dow Chemical, Skandia and Fidelity. Interest seems to be rising rapidly.

In the know

These companies are experimenting with knowledge management

★ **Skandia Corp.** Few have tackled knowledge management and measurement as zealously as Skandia Corp. The global insurance firm is expanding its Notes-based "knowledge bases" beyond Europe and the U.S. into Mexico, Colombia and Tokyo, says Christopher Luise, vice president of system management/research and development at American Skandia in Shelton, Conn. The American sister company's information services and technology group also measures computer literacy and usage by employees. Skandia's new Assess software gives more than 7,000 brokers detailed knowledge of investment options and asset allocations. It also assists in sales and client proposals.

★ **Northeast Utilities Co.** Earlier this year the Hartford, Conn.-based electric company created a "Central Information Group" to identify, categorize and share knowledge across the organization, says finance manager and group member Bud Eckenroth. The group includes representatives from IS, accounting, human resources, treasury and others.

★ **Fidelity, Inc.** The Boston-based giant's brokerage group has formed a 20-member volunteer team "looking at ways to use information and learning," says Vice President Bill Nigreen. The "Kaizen Learning Network" grew from corporate total quality efforts and includes representatives from every major department. Nigreen says it has already produced benchmarking databases for internal and external use, a draft "information architecture" and a Notes-based communications vehicle about the project called "Fidelity Facts."

Smarten up!

CONTINUED FROM PAGE 85

starting a product launch today, you'd find they are provided with significantly more understanding on how to meet customer requirements and get to market faster than two years ago," Barabba says. Whether the concept proves salvific or scrap-worthy remains to be seen.

But the current corporate interest is no passing fad, says Harvard Business School professor Christopher A. Bartlett. He says it's part of the quickening switch from an industrial-based to an information-based economy.

"Knowledge is now the center of the company. It is needed to free the creativity and initiative of frontline managers and regiments," Bartlett says.

Why now? Companies have fewer people, more technology and more information, Davenport notes. Rapid growth of groupware and networks are big factors. So is widespread business process re-engineering.

Interest is growing. McKinsey & Co., Andersen Consulting, Price Waterhouse, Gemini Consulting and other big consultancies are developing knowledge management expertise internally and with clients.

Acknowledging the difficulties

Despite their enthusiasm, IS leaders and consultants caution that implementing knowledge management will be tough. Among the major problems:

■ **New mind-set for IS.** University of Texas professor Thomas H. Davenport says companies must "begin by thinking about how people use information, not how people use machines." That enormous change would boggle many IS groups, many of whom Davenport says are tempted to deliver a "knee-jerk technology response."

Jane C. Linder, senior manager at Polaroid Corp.'s New Business Concepts Center, agrees that IS must stretch to succeed in the role. "Information providers — even if they care about content — often feel their job is done when they provide access [to information]," she says. But more is needed to make information usable or useful, she says.

■ **New skills.** Speedy delivery and analysis of knowledge requires mastery of many new tools and techniques, say experienced chief information officers. Among those tools and techniques are Notes or other groupware, rapid and joint application development, object-oriented programming, "scrubber" software to improve data quality, middleware for accessing legacy databases, search engines, data warehousing

and enterprise reference systems.

Moreover, heavy communications and infrastructure experience is needed to support complex knowledge delivery systems that increasingly include images, video and voice. Leadership and decision-making skills also are key.

One snag in learning knowledge management, says Gary Banks, director of Monsanto Corp.'s center of technical excellence, is that "there's no place to get trained."

■ **Skepticism about "CKOs."** Many wonder if the title chief knowledge officer will fly. Says Bruce Rogow, an independent consultant and Gartner Group fellow in Marblehead, Mass.: "If the CIO stands up one more time and says, 'I am the chief anything officer,' [people] are going to be saying, 'You're the chief B.S. officer.'"

Some CIOs, including Craig D. Goldman of The Chase Manhattan Bank NA and Michael Radcliffe of Owens-Corning Fiberglas Corp., say they already serve as de facto CKOs. They question if a new title is needed. "Information is our lifeblood," Goldman says.

Moreover, Harvard Business School professor Christopher A. Bartlett says he worries that creating a CKO might give line managers the erroneous — and dangerous — belief that knowledge is not their concern.

And many IS groups lack the clout needed to assume the role, Linder says. "It will take some concerted effort on the part of MIS and business to change that," she says.

■ **Huge scope.** Consider Monsanto Corp. Its new 20-member Knowledge Management Architecture team faces a Herculean task, says Bipin Jannarkar, director of the 3-month-old

“Knowledge is now the center of the company. It is needed to free the creativity and initiative of frontline managers and regiments.”

— Christopher A. Bartlett
Harvard Business School

Ernst & Young recently started a Knowledge Management Practice and opened a Center for Business Knowledge in Cleveland last year. Two dozen major U.S. corporations have joined its new research consortium on the topic.

Moreover, some 200 top executives jammed a Plan-

ning Forum/Ernst & Young conference on knowledge in Boston last fall. Another is set for November.

Interest is worldwide: Kao, the Japanese soap and detergent giant, is a pioneer manager of knowledge. "The Japanese Procter & Gamble" is noted for savvy use of expert systems and open decision-making.

For most firms, it's too early to tell how well knowledge management efforts will pay off. Measurement is difficult. Robert R. Walker, HP's director of information systems, says creating extensive on-line knowledge maps and delivery systems has helped improve access and slash costs. "Forty percent of the occupancy cost of one organization was paper storage," he told attendees at the Knowledge Advantage conference.

Other questions loom: Will companies already reluctant to fund employee training be willing to pay for them to learn knowledge management?

Like re-engineering, knowledge management will be embraced by some, delayed or even ignored by others. Time will tell who's smartest.

Like re-engineering, knowledge management will be embraced by some, delayed or even ignored by others. Time will tell who's smartest.

Maglitta is *Computerworld's* senior editor, Corporate Strategies. *Computerworld* research analyst Laura Hunt contributed to this report.

Resources

- "Saving IT's Soul: Human Centered Information Management" Thomas H. Davenport *Harvard Business Review* March-April 1994 (617) 495-6985
- **The Knowledge Advantage Conference** Chicago, Nov. 16-17 (617) 725-1541
- **Conference on Information and Knowledge Management** Baltimore, Nov. 29-Dec. 2 (410) 455-2594
- "Intellectual Capital: New Ways to Build It and Manage It" *Fortune*, Oct. 3, 1994
- **The Information Mosaic** Sharon M. McKinnon and William J. Bruns Jr. (\$24.95) (617) 495-6117
- **Future Work: Putting Knowledge to Work** Charles D. Winslow, William L. Bramer (\$29.95) (800) 223-2336

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Intelligence Files

They'll communicate with everyone, but they won't talk to you

THE CORPORATE COMMUNICATIONS FUNCTION — the department that gets out the company message to employees (and the press) — has a love affair with information technology. Electronic mail will soon surpass the copy machine as the most widely used technology for communicating with the corporate masses. Bulletin boards, video- and teleconferencing and fax aren't very far behind.

But there's one group to whom corporate communicators have little to say: information systems.

communicators say technology and employee communications are vitally linked, 80% say they have no formal ties to IS.

Those are among the findings of a recent study of nearly 100 employee communications vice presidents, directors, managers and supervisors at primarily Fortune 100 companies. The study was sponsored by Cognitive Communications, Inc. in Stamford, Conn.

The study also found that while nearly 60% of corporate communications is in print form, the communicators say they expect to be using electronic and print media equally for all internal communications within three years. That is because they say electronic means can reach more employees more quickly and at reduced cost.

"Employee communicators believe information distributed electronically will be the norm" before the beginning of the next century, says Michael Rudnick, a partner at Cognitive Communications. "This is a remarkable prediction, given the fact that the employee communicators surveyed said they used electronic media for just 10% of their communications just three years ago."

Meanwhile, the survey found that when it comes to chewing the fat with co-workers, the PC has replaced the water cooler as the most popular place to share information and dialogue.

Employees now use a dozen technologies to speak to one another, with electronic mail by far the most popular. Nearly 90% of the companies surveyed say E-mail is their most commonly used form of person-to-person communication, and 54% use E-mail to post messages to on-line bulletin boards.

Can't say enough about technology

Most corporate communications managers agree on the need to use and upgrade technology

Percentage who say technology:

Is vital to employee communications	90%
Must be upgraded	90%
Has improved efficiency and productivity	81%
Is a high priority	80%
Upgrades should be managed by communicators	78%

Base: 100 corporate communications managers at Fortune 100 companies. Survey by Cognitive Communications, Inc., Stamford, Conn.

That may come as a surprise, considering that the majority of Fortune 100 corporate communications managers say they want to be involved in any upgrades in communications technology and that they see themselves as the strategic information managers. And even though 90% of corporate

"Can we E-mail?"

Leading companies say E-mail is their most commonly used employee communications tool

Percentage that say they use the following:

E-mail (person-to-person)	88%
Print materials	75%
E-mail (top-down publishing)	68%
E-mail bulletin boards	53%
Videoconferencing	52%
Teleconferencing	51%
Broadcast voice mail	50%

Base: 100 corporate communications managers at Fortune 100 companies. Survey by Cognitive Communications, Inc., Stamford, Conn.

Information systems should be a follower when it comes to application development

The best way to give users what they need from new applications development is to let them show you, according to a new report from Forrester Research, Inc., a consultancy in Cambridge, Mass.

In "New Media Tools," Forrester says that in order to create the customer-oriented applications that users require, IS must take a back seat in application development to user teams that consist of members from other departments and

nontechnical backgrounds.

Key to this effort is the connection between the IS and marketing departments, an alliance that has been rare in most companies. Pure technologists must work with con-



tent specialists, graphic artists, videographers and others to create applications that grab and keep customers. This collaborative approach has been virtually nonexistent in most companies.

Want career success? Put family first, study says

Information systems professionals who want a bigger paycheck may want to pay more attention to their home life.

That is the finding of a new national study by the University of Pennsylvania's Wharton Business School that says professional workers who earlier in life ranked a good marriage and raising a family as their top goals tend to have higher salaries later in their careers.

The findings were published recently in a Wharton monograph titled "It Pays to Value Family: Work and Family Trade-offs Reconsidered."

Respondents were first surveyed as high school seniors and again after 14 years in the work-

force. Those who had initially rated a strong family life as a major goal were found to enjoy higher hourly earnings than those who didn't — 7% more for men and 4% more for women. And those who specifically ranked career-oriented goals such as success at work, having a lot of money and finding a steady job as most important earned less than the average participant.

The study notes that economists have long wondered why married men earn better salaries than their unmarried counterparts. The Wharton study suggests that the willingness to make a strong commitment to marriage or family carry over to the workplace.

In addition, the emotional support from a spouse or family helps employees better cope with job-related problems or stress.



IS Managers' Bookshelf

TQM for Information Systems Management

By James W. Cortada

This thorough and practical guide by an IBM consultant brings total quality management down to earth for IS managers, from supporting business strategies to applications development, IS operations and personnel practices. (McGraw-Hill, Inc., New York; 301 pages, \$29.95)

Information Systems Position Description HandiGuide

By M. Victor Janulaitis

At \$395, it isn't cheap, but this consultant's newly revised guidebook provides standard job descriptions of traditional (but not unconventional) IS positions. (Positive Support Review,

Santa Monica, Calif.; 445 pages, \$395)

Hook Up, Get Hired!

The Internet Job Search Revolution

By Joyce Lain Kennedy

The Internet is the new way to find jobs. Kennedy shows where the jobs (including technical ones) are posted and how to get your resume noticed on the 'net. (John Wiley & Sons, New York; 250 pages, \$12.95)

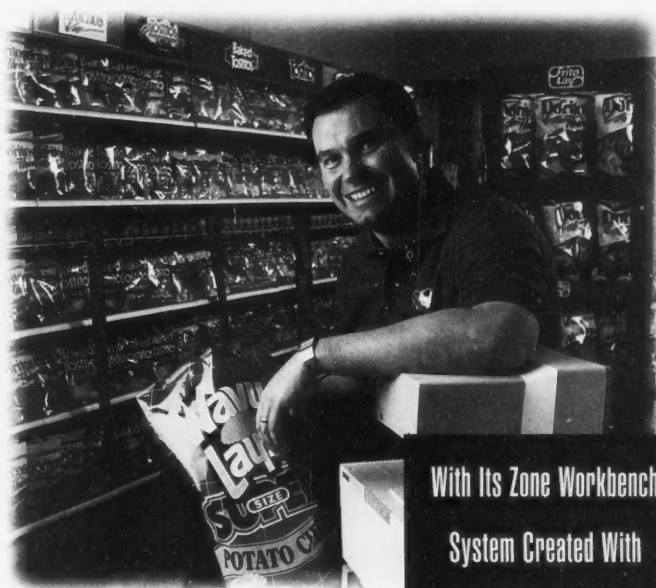
Say It and Live It: The 50 Corporate

Mission Statements That Hit the Mark

By Patricia Jones and Larry Kahaner

This guide is not IS-specific but is useful if you must write a mission statement for your department. (Currency/Doubleday, New York; 267 pages, \$14.95)

How Frito-Lay Handles the Decision Making CRUNCH



With Its Zone Workbench
System Created With
SAS Institute Software

**Doritos® and Tostitos brand
Tortilla Chips, Lay's® and
Ruffles® brand Potato Chips,
and Rold Gold brand Pretzels**

It's hard to imagine any company that understands consumer tastes better than Frito-Lay, a leader in the U.S. salty snack category with annual revenues of more than \$5 billion. Yet Frito-Lay is determined to get even closer to its 400,000 retail customers.

In fact, a decentralization effort begun in 1990 has, in the last five years, brought a renewed sense of ownership and empowerment to the 30,000 Frito-Lay employees. As part of this ownership, Frito-Lay's Information/Technology Systems department (ITS) has created a tactical, market-driven decision support system—the Zone Workbench System—designed to get timely information in the hands of front-line managers.

It's an application built from the customer up, and the SAS® System of software has been there every step of the way.

"The Zone Manager is the first line of communication with our Route Sales force," says Tom Nealon, Director of ITS for Frito-Lay, whose department spearheaded development of the decision support system. "We knew from the start that the Zone Workbench had to provide information that was 'actionable'. It also had to be portable across client/server, workstation, or laptop environments. Equally important was the ability to integrate multiple data sources."

Delivering More than Software Alone

"Given the tight schedule, the software company we chose had to provide superior applications development tools—as well as comprehensive training, consulting services, and documentation," adds Nealon. "SAS Institute came through on every count, proving time and again the value of having a software vendor that's as interested as we are in completing projects on time and on target."

Nealon calls the Zone Workbench "a tremendously versatile business tool proving user-friendliness, power, and portability between platforms can all operate in one package. The old-style EIS systems are antiques. The game today is to provide information that can impact the marketplace each day, for each of our customers. For Frito-Lay, SAS Institute is making sure we have the tools to make an impact."

To receive a SAS System Executive Summary, give us a call or send us e-mail at cw@sas.sas.com



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Microsoft Windows NT Server: The network foundation for a new generation of business applications. It is a multipurpose network operating system that can deliver application server capabilities without compromising file and print service performance.

Microsoft SQL Server: The high-end database platform at the center of a complete client-server architecture for information management.

Microsoft SNA Server: Makes it easy to connect PCs to IBM mainframes and AS/400s.

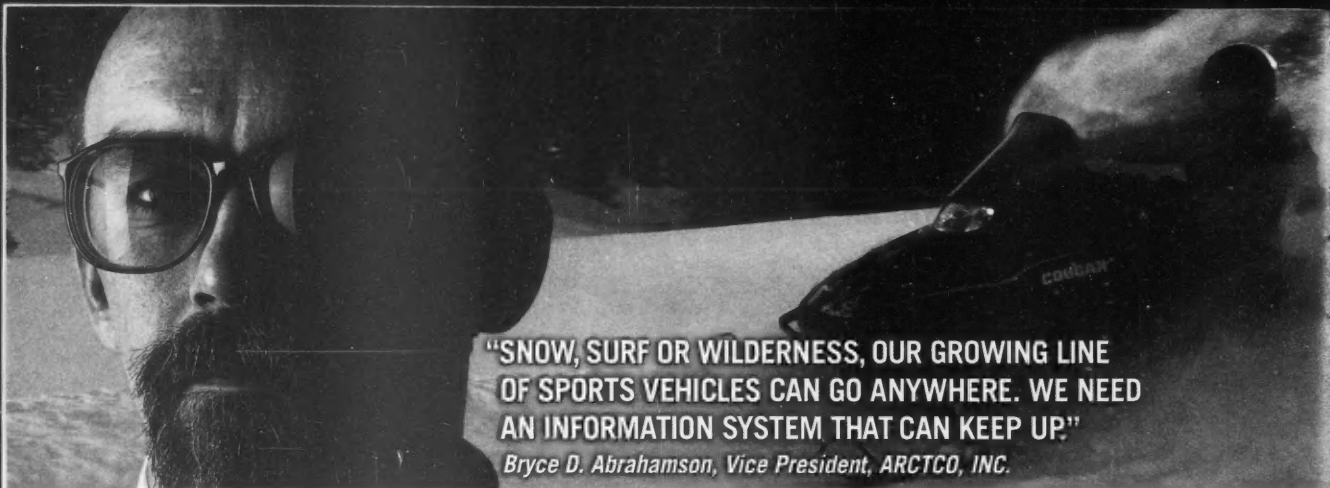
Microsoft Mail Server: The heart of a complete messaging system that makes it easy to communicate with anyone, anywhere.

Microsoft Systems Management Server: The most comprehensive solution for managing networked PCs.

Client License Pak: BackOffice family licensing simplifies client-server pricing. The client license pak includes one Client Access License for each BackOffice server product you acquire, essentially licensing a single desktop to access those products on any server.

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BRYCE: "Our Arctic Cat snowmobiles and Tiger Shark watercraft keep us moving year round. Soon, we'll have an all-terrain vehicle. Our growth is changing the way our business operates. When Ray said our information system had to change with it, I saw only giant moguls ahead."

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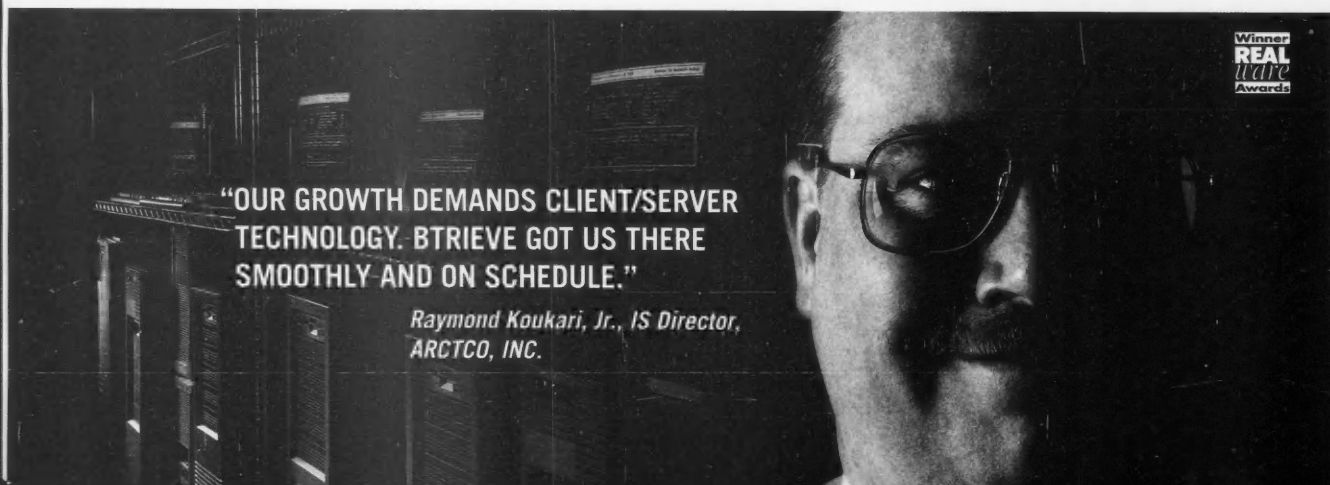
BRYCE: "New information systems have a reputation for requiring more: more time, more people, more money. Ours proved just the opposite."

RAY: "We've kept our staff lean and cut training time. We've reduced response time to two seconds and the time it takes to produce MRPs has been cut in half. Thanks to Btrieve, we are molding our system to meet our growing company's needs."

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Calendar

JUNE 25 - JULY 21

MANAGEMENT

Achieving Excellence in MIS Through Total Quality Management (TQM). Washington, June 26-28 — A three-day seminar on how to implement a TQM program in the IS function. Fees: \$1,395 for American Management Association (AMA) members, \$1,605 for nonmembers. Contact: AMA, New York, N.Y. (800) 262-9699.

Channels for Change: International Network of Women in Technology Conference. Santa Clara, Calif., June 27-29 — Theme: "Channels for Change: a Celebration of Women in Technology." Keynote speaker will be feminist leader Gloria Steinem. Contact: International Network of Women in Technology, Sherman Oaks, Calif. (818) 990-1987.

Central Region Data Administration Management Association (DAMA) International Symposium. Milwaukee, July 10-11 — Theme: "Refocusing Data Administration." Cosponsored by DAMA Milwaukee Chapter and DAMA International. Speakers will include Jim Sinur of Gartner Group, Inc. and Larry English of Information Impact International. Contact: Ellen Munroe, DAMA, Milwaukee, Wis. (414) 783-1726.

The MIT Executive Short Course for Chief Network Officers. Cambridge, Mass., July 10-14 — Theme: "Managing the Information Technology Network for Global Competitiveness." Course focuses on the strategic role of telecommunications in global organizations and managerial and technical challenges the chief network officer faces in building and managing a network infrastructure. Contact: Executive Education Short Courses, MIT Sloan School of Management, Cambridge, Mass. (617) 253-7166.

USER GROUPS

Second Annual Southern California Technical Conference for Midrange Computer Professionals. Costa Mesa, Calif., July 20-21 — Sponsored by the Ocean User Group of AS/400 users. Fee: \$325. Contact: Ocean User Group, Corona Del Mar, Calif. (714) 751-5100.

TECHNOLOGIES

Third Annual International Environmental Visualization Exposition. Research Triangle Park, N.C., June 26-28 — Focus will be on computer graphics education programs and computer graphics as a diagnostic tool for environmental science research. Contact: Kerstin Felske, Lockheed

Calendar announcements should be submitted at least six weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and phone number.

SEND ANNOUNCEMENTS TO:

David Weldon, Associate Editor/Management, Computerworld, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931.

Martin, Bay City, Mich. (517) 894-7699.

The Association for Work Process Improvement's 1995 Forum & Exposition. Fort Lauderdale, Fla., July 9-12 — Theme: "Transaction Processing Application Solutions: The User's Perspective." Alan J. Parisse will deliver the keynote address

on "Managing Cycles and Change." Contact: Linda Cooper, executive director, The Association for Work Process Improvement, Boston, Mass. (617) 426-1167.

INDUSTRIES

The Fifth Annual Healthcare Information Systems Conference & Expo. Washington, June 25-28 — Focus will be on the latest developments in IS for patient care, managed care, systems integration, point-of-care, telemedicine and com-

munity and enterprise health information networks. Contact: Inside Healthcare Computing, Oxnard, Calif. (805) 984-8500.

On Demand Digital Printing & Publishing Strategy Conference & Exposition. New York, June 27-29 — Focus will be on the latest developments in digital printing and publishing, targeting commercial printers, publishers, service bureaus and outsourcing firms. Contact: John V. Goliec, Expocon Management Associates, Inc., Fairfield, Conn. (203) 256-4700.

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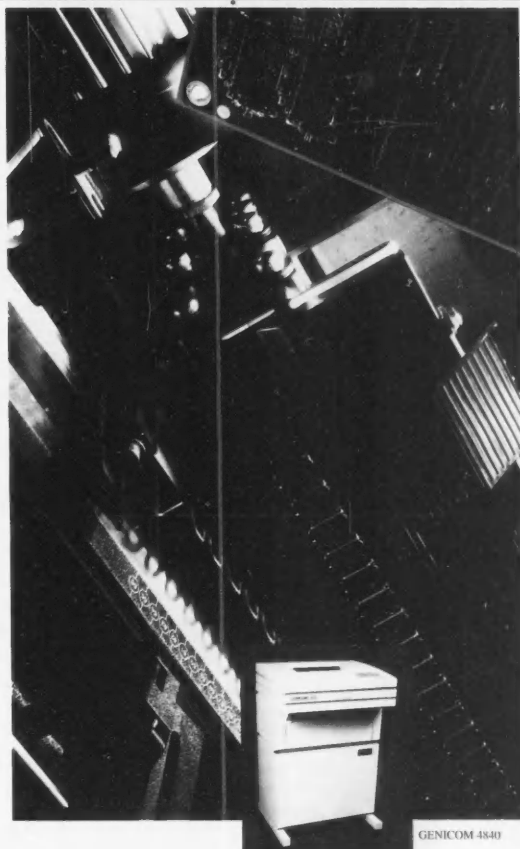
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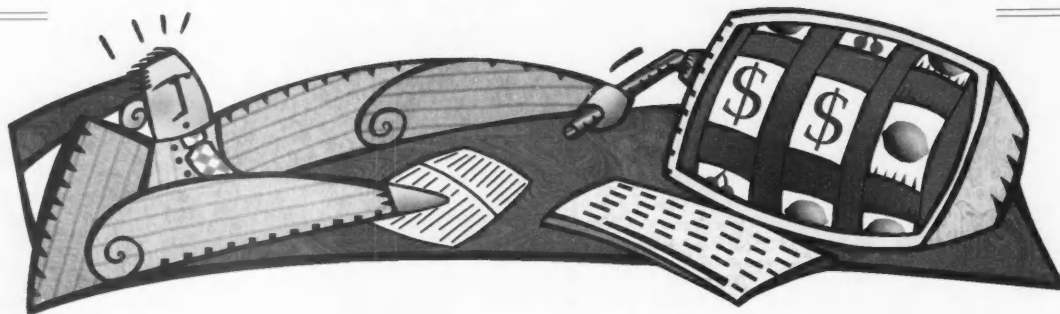
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The CW Guide to Office Suites



Sometimes suites go sour,

Memory and support costs drag down the value of office suites

~By Michael Erbschloe~

So your users are craving suites such as Novell, Inc.'s PerfectOffice, Lotus Development Corp.'s SmartSuite and Microsoft Corp.'s Microsoft Office. Well, you're going to have to swallow some sour truths about costs, support issues and whether it's really worth the effort.

"Software suites are ideally suited for individual productivity," says Bob Simco, president of International Technology Group in Mountain View, Calif. "Suites are not very sweet when brought into larger computing environments."

While users like the consistent look and feel of suites and the fact that they can easily merge word processing, spreadsheet, database and presentation functions, information systems staffs must contend with the increased costs that suites entail.

"The basic configuration required for desktop PCs running software suites differs from PCs running DOS applications and even most Windows applications," Simco says.

In fact, companies are spending \$10,000 or more to deploy hardware and software to each desktop, and they can expect to pay an additional \$10,000 per unit each year for the next four or five years to cover support and upgrade costs, according to industry analysts.

The following is a breakdown of the cost-guzzlers:

Memory. Requirements have leaped from 1M or 2M bytes just a couple years ago to 4M, 8M and sometimes 16M bytes. The next round of upgrades will require at least 5M bytes of memory and, from

Hidden costs

Office suites are consuming more and more memory, which requires more advanced PCs. They are also cramped by the 640K-byte barrier of Windows 3.1. Windows 95 breaks down that barrier, but it only adds to the RAM cram.

MEMORY REQUIREMENT

SUPPORT COSTS

	Lotus SmartSuite 3.0	Novell PerfectOffice 3.0	Microsoft Office 4.2
MEMORY REQUIREMENT	6.5	6.2	5.3
SUPPORT COSTS	6.3	6.1	6.0

1-to-10 scale where 1 is least satisfied and 10 is most satisfied

SOURCE: BUYERS' SATISFACTION SCORECARD, 155 USERS

what we hear on the street, it will more likely be a minimum of 16M to 32M bytes.

Hard disk space. Software packages that used to fit in 1M or 2M bytes of space now require up to 10M to 20M bytes, or even more, for a full suite. Future versions are likely to consume two to three times the hard disk space required for a 1994 or 1995 vintage package.

Video and bus requirements. Higher resolution monitors are becoming a standard, driving up the

costs of the individual desktop unit. The graphic intensity of Windows-based products has also resulted in the need for faster and, of course, more expensive video bus architectures. The unacceptable alternative is to point, click and wait, and wait.

Other problems to contend with when deploying software suites include the following:

- Short-term productivity loss due to learning curves
- Overstated functionality



This survey was based on interviews with roughly 50 users of each product. Users were asked to rate their satisfaction with the suite's three major application areas. These numbers represent the average of those ratings.

Best of breed

No single application suite is best at everything. PerfectOffice's word processor makes up for its weak spreadsheet. Office needs work on its graphics package, and SmartSuite appears to be well rounded.

	Lotus SmartSuite 3.0	Novell PerfectOffice 3.0	Microsoft Office 4.2
SPREADSHEET	7.8	6.7	7.7
WORD PROCESSOR	7.1	8.1	7.7
GRAPHICS	7.2	7.0	6.9

1-to-10 scale where 1 is least satisfied and 10 is most satisfied

WHAT PEOPLE ARE SAYING

Microsoft's Office 4.2

"Office's components — Word, Excel and PowerPoint — share a consistent interface. In fact, their respective menu bars are virtually identical." (Information Access Co., February 1995)

"The only suite that runs on Windows and Macintosh systems is Microsoft Office 4.2, which, however, lacks a database and (personal information manager)." (PC Week, Jan. 16, 1995)

Novell's PerfectOffice Professional, Version 3.0

PerfectOffice, "is not that easy to use with other software." (Chester Bishop, IS manager, Enterprise Title, Pembroke Pines, Fla.)

"PerfectOffice has leapfrogged Microsoft's Office and Lotus' SmartSuite to become the most tightly integrated office suite on the market. In the increasingly critical area of workgroup support, PerfectOffice's Object Exchange data sharing technology makes the suite an especially attractive choice." (Infoworld, April 24, 1995)

"Buyers should be aware that PerfectOffice is resource-intensive. A complete installation of PerfectOffice Standard takes up 98M bytes of hard drive space — about 20M bytes more than SmartSuite or Office." (PC Week, Jan. 16, 1995)

Lotus' SmartSuite 3.0

"The functionality of the suite is adequate most of the time." (Susan Chandler, MIS director, Insurance Benefits Consults Ltd., Skokie, Ill.)

"With SmartSuite, Lotus has done a terrific job in giving its applications a consistent look and feel. The use of SmartMasters enhances consistency. Lack of uniformity, however, in areas such as File Open dialog boxes and the use of the right mouse button lessens its appeal as a suite of products, as does its limited support for [Microsoft's] OLE 2.0." (Home Office Computing, March 1995)

"Despite a consistent look and feel... SmartSuite lacks the slick integration — the drag-and-drop data sharing and in-place editing — of the OLE 2.0-capable Microsoft Office and PerfectOffice, though it does have the ability to link and embed ELE objects." (Computer Shopper, February 1995)

but users like the ingredients

- Poor interoperability
- Inability to use legacy documents with new suites
- Complexity of suites creates need for more sophisticated support
- Frequent upgrades
- Time — Deployment of suites takes time, sometimes months

Against all these issues are the following benefits that may still carry more weight:

- You can buy four applications in one box for \$450 to \$700. This can be almost a 4-to-1 savings over single applications, which cost \$300 to \$400 each.
- Users can obtain the same or superior functionality in one-tenth the time and effort. They have to learn only one interface, and there are no additional macros or other programming/installation issues required to link applications.
- There's less time for the staff to learn the installation and support for the product. There is now only a single environment to support.
- The productivity gains users experience may impact the company's bottom line directly, and IS also gains productivity if the company standardizes on a single desktop suite environment.

Easy to use

IS may have concerns about supporting suites, but users generally find them easy to use even though they contain multiple applications, links and configuration issues

	Lotus SmartSuite 3.0	Novell PerfectOffice 3.0	Microsoft Office 4.2
EASE OF USE	7.6	7.4	7.3

1-to-10 scale where 1 is least satisfied and 10 is most satisfied

But this bittersweet equation — productivity gains equals support pains — is unlikely to change anytime soon. Vendors are aware of the issues, but they are all retooling their products in preparation for future PC platforms.

The driving force behind the next round of suite releases is the upcoming migration to Microsoft's Windows 95.

These releases will likely impact support

needs, migration schedules and support costs. They may also leave many users toggling between the new versions of suites and their legacy systems until all of the application packages once again are in sync with the new Windows environment. ■

Erbschloe is a consultant and freelance writer based in San Diego. He can be reached by ComputerServe at 74172.3626.

Lotus' NotesSuite: Strong but isolated

The combination of SmartSuite with Notes allows for greater teamwork, but don't try to add outside data or applications

~By Kevin Burden~

If Lotus Development Corp.'s SmartSuite simplifies work on the desktop and Notes improves team productivity, can the integration of the two in Lotus' NotesSuite be the answer to productivity bog-down?

Potentially, yes, according to four users interviewed.

NotesSuite makes it easier to develop groupware applications by tying many core applications into an integrated package. Jumping between applications and sending files to colleagues is reportedly faster and easier, thanks to the sturdy union.

But be warned: Do not expect the same integration of NotesSuite applications with Microsoft Corp. applications. Even if they have Notes/FX integration capabilities, applications from the competition still do not play well together.

Installation

Installing NotesSuite is no different than installing any other Windows application — it just takes up more space.

"Even our laptops are set up with large hard drives. Disk space is just not as big of an issue as it used to be," says a user at an oil and gas company.

The real issue is memory. NotesSuite stretches the 640K-byte memory barrier of Windows 3.1 to its limits, especially its Freelance Graphics 2.1 portion.

"When Freelance got bigger, we started having problems sending [Freelance] files with attached memos or documents. It's been a real killer for our mobile users after they load all their drivers," says the oil company user.

Upgrading any of the suite's applications over a network was fairly simple. "We create an E-mail message with a button on it that users click to start the install process," one user says. But upgrading the Notes portion caused problems in

NotesSuite

Lotus Development Corp.
Cambridge, Mass.
(800) 343-5414



Computerworld interviewed four NotesSuite users from different industries for this evaluation. The verdict? Its applications are securely integrated, but problems abound when hooking NotesSuite up to outside applications.

	Oil and gas company	Insurance company	Construction company	Electric company
EASE OF INSTALLATION	7	7	7	8
<i>Installation was straightforward, but users anticipate a lot of manual work when upgrading to Notes 4.0.</i>				
NOTES INTEGRATION WITH SUITE APPLICATIONS	7	8	7	9
<i>Notes/FX 1.1 technology worked flawlessly. Only the high memory demands of Freelance Graphics caused problems when used with Notes.</i>				
NOTES INTEGRATION WITH NON-LOTUS APPLICATIONS	3	5	5	4
<i>Simple files converted successfully; complex files caused only headaches; Microsoft Office triggered reported migraines.</i>				
APPLICATION DEVELOPMENT	7	9	7	7
<i>Users said development was masterful within its workflow/document management paradigm, especially with its numerous templates.</i>				
SCALABILITY	8	4	4	6
<i>Per server scalability was trounced. Two evaluators said several OS/2 servers were needed for less than 1,000 clients.</i>				

1-to-10 scale where 1 is least satisfied and 10 is most satisfied

Vendor response

Freelance memory

Slipstream files eliminate the memory management problems Freelance Graphics 2.1 causes when running with other memory-hungry applications. It will also benefit users with small amounts of conventional memory. Slipstream files are in NotesSuite and are available on CompuServe.

—Peter Van de Graaf, Freelance Graphics senior product manager

Notes/FX

Microsoft has been made aware of the Notes/FX technology problems in Office. The problem is not the FX protocol but the way Microsoft implemented it. Notes/FX and Notes are open technologies, and the integration any vendors provides is dictated by that vendor.

—Tom Kane, NotesSuite product manager

the past for two evaluators, and that has them dreading the release of Notes 4.0.

"We were jumping through hoops to get the [Notes] 2.x to 3.x upgrade to work," says a user at an insurance company.

Notes integration

Considering that several of the applica-

tions that make up NotesSuite are not Lotus originals, Lotus has done a masterful job of giving each a similar look and feel, users explain.

Notes/FX 1.1, Lotus' integration technology based on Microsoft's OLE, enables bidirectional sharing of data and tools among applications. Evaluators said they could flawlessly step in and out of suite applications while in Notes.

Integration with other apps

Notes/FX also provides the hooks to other desktop applications such as Microsoft's Office. Unfortunately, the integration was not as clean.

"We have been trying to use the FX capability in Microsoft Office — we have had nothing but problems. In those instances where we have been able to transfer a Microsoft file, the conversion is often a long process, and the file needs to be cleaned up. Other times, it just fails to make the link," says a user at an electric company.

The only solution was to keep conversions as simple as possible.

Application development

Stay within the document management development paradigm, and "it does a fine job," users say. But try to develop relational programs, and the problems begin.

To assist novice developers, NotesSuite delivers a variety of task-specific templates developers can build on.

"If we were not so concerned with our visual standards, we would have left the templates as they were. Lotus really put a lot of thought into them," the user at the insurance company says.

To fill some of the language's gaps, two of the users turned to Lotus' VIP.

Scalability

The server operating system dictates the scalability of NotesSuite more than any other factor. The evaluators used OS/2 on their servers and expressed similar convictions — "scalability per server is poor."

Burden is Computerworld's senior researcher, Scorecard/Firing Line.

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1995 Finalists nominated by the Computerworld Smithsonian Awards Chairmen's Committee:

BUSINESS & RELATED SERVICES

Bell Atlantic Information Systems

LiveWire

Nominated by Andersen Consulting

Federal Express

Powership II

Nominated by U.S. Robotics, Inc.

MCI Telecommunications, Inc.

networkMCI SmartPop

Nominated by Digital Equipment Corp.

SpeakEZ

Speaker Identification and Voice

Recognition Software

Nominated by Price Waterhouse

Wal-Mart Stores, Inc.

Retail Link™ & Electronic Data

Interchange

Nominated by Sterling Software

EDUCATION & ACADEMIA

Saginaw Valley State University

EarthVision: EPA's Grand Challenge

for High Schools

Nominated by Cray Research, Inc.

Stevens Institute of Technology

The CREATE Project: Computing in

Research and Education for Advanced

Technology

Nominated by Zenith Data Systems

The Computer Museum

The Networked Planet Exhibit: Gateway

Server to the Internet

Nominated by Stratus Computer, Inc.

University of California, Los Angeles

The UCLA Science Challenge

Nominated by Hewlett-Packard Company

Warren Consolidated Schools and

Ameritech

ThinkLink

Nominated by Zenith Data Systems

ENVIRONMENT, ENERGY & AGRICULTURE

Adam Opel AG

Hazardous Material Control System

(HMCS)

Nominated by EDS

Consortium for International Earth

Science Information Network (CIESIN)

CIESIN's Gateway

Nominated by Hewlett-Packard Company

Marine Environmental Technology

Operation (METO) of SAIC

Remote Ecological Monitoring of the

Seafloor Technology (REMOTS®)

Nominated by Price Waterhouse

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Agency, Chesapeake Bay Program

Office

Integrated Models of the Chesapeake

Bay Watershed, Airshed and Estuary

Nominated by Cray Research, Inc.

Weyerhaeuser Company

Habitat Conservation Plan (HCP) for

the Northern Spotted Owl

Nominated by Intel Corporation &

Hewlett-Packard Company

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Bank of America

COIN - Customer On-line Information

Network

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Corporation

Chicago Board of Trade (CBOT)

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Nominated by Sybase, Inc.

FannieMae

Desktop Home Counselor

Nominated by Microsoft Corporation

New York Stock Exchange, Inc. (NYSE)

Integrated Technology Plan

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& Hewlett-Packard Company

The First National Bank of Chicago

The Customer Workstation

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COMPUTERWORLD

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New Heroes

Smithsonian Institution thank the
their work in nominating entries and
es to the finalists.

GOVERNMENT & NON-PROFIT ORGANIZATIONS

Indian and Northern Affairs Canada (DIAND)
Dossier Executive Information System
Nominated by Hewlett-Packard Company

National Adoption Center
National Adoption Exchange
Nominated by KPMG Peat Marwick

Norwegian Police Data Processing Services
POS - Police Operations Support System
Nominated by Andersen Consulting

United Nations High Commissioner for Refugees
Operation reUNite
Nominated by EDS

United States Social Security Administration
Assistive Computing Devices for the Disabled Workforce
Nominated by Madge Network Systems

MANUFACTURING

Alican International Ltd.
Computer Simulated Sheet Metal Stamping
Nominated by Cray Research, Inc.

Bayer AG
Chemical Process Simulation of Integrated Plants
Nominated by Cray Research, Inc.

Boeing Commercial Airplane Group, 777 Division
Computing and the Boeing Design
Nominated by Intel Corp. & Ernst & Young

Cox Communications, Inc.
Electric Commerce Network (ECNet)
Nominated by Digital Equipment Corporation

International Rectifier
VISION System
Nominated by Andersen Consulting

MEDIA, ARTS & ENTERTAINMENT

America OnLine Technology
Network Communications and Systems Programming
Nominated by Hewlett-Packard Company

Carnegie Mellon University
The Networked Virtual Art Museum: The Temple of Horus
Nominated by Intel Corporation

Maxis
SIM Product Line
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National Center for Supercomputing Applications
NCSA Mosaic
Nominated by IBM Corporation

U.S. News & World Report
U.S. News Online
Nominated by CompuServe

MEDICINE

National Marrow Donor Program
STAR Bone Marrow Registry
Nominated by Andersen Consulting

PharMark Corporation
RationalMed®
Nominated by Digital Equipment Corporation

Rose Health Care System/Lockheed Martin
Automated Mammogram Analysis Project
Nominated by Shared Medical Systems Corporation

Stanford Health Services Home Health Care Department
Home Health Care Information System
Nominated by Zenith Data Systems

United Network for Organ Sharing (UNOS)
Organ Information System
Nominated by Lotus Development Corporation

SCIENCE

DuPont
Alternatives to Chloroflourocarbons
Nominated by Cray Research, Inc.

European Centre for Medium-Range Weather Forecasts (ECMWF)
Spectral Weather Forecasting Model Using Massively Parallel Processing (MPP)
Nominated by Cray Research, Inc.

Fox Chase Cancer Center
Cooperative Human Linkage Center
Nominated by Digital Equipment Corporation

Interdisciplinary Centre for Mathematical and Computational Modeling (ICM), Warsaw University
Visualization Techniques and Quantum-Classical Dynamics Software Tools for Simulations of Enzymatic Reactions
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Pittsburg Supercomputing Center and the University of Chicago
Simulation to Predict Comet-Planet Collision
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TRANSPORTATION

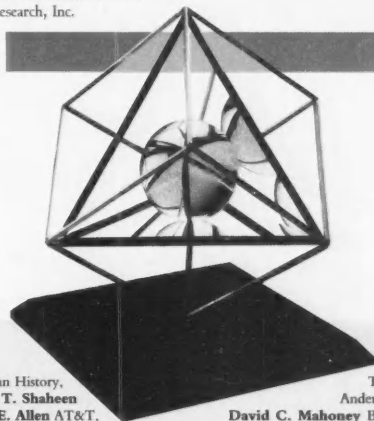
AlliedSignal, Inc.
Forward-Looking Windshear Weather Radar System
Nominated by Price Waterhouse

Hongkong International Terminals Limited
Ship Planning System
Nominated by Sun Microsystems, Inc.

Scandinavian Airlines System (SAS)
Origin and Destination Revenue Management System
Nominated by Unisys Corporation

Toronto Transit Commission
Wheel Trans Information System (WTIS)
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U.S. Military Traffic Management Command (MTMC)
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In Depth

Making a difference



FINALISTS FOR THE 1995 COMPUTERWORLD SMITHSONIAN AWARDS

Business and related services

Bell Atlantic Information Systems
Diagnosing phone network problems before they happen

FedEx Corp.
Typing into the customer fulfillment process

MCI Communications Corp.
Round-the-clock telecom network capability that borrows public voice network capacity as needed

SpokeEZ
Using voice patterns to identify individuals for credit cards, security systems and automated teller machines

Wal-Mart Stores, Inc.
Sharing detailed sales data with 10,000 vendors

Education and academia

Sagehen Valley State University
High school students access supercomputers to carry out environmental research

Stevens Institute of Technology
Making computing pervasive throughout its college curriculum

The Computer Museum
Exhibits that provide perspective on the impact of computers on our planet

University of California, Los Angeles
Computer simulation of apparatus such as telescopes and spectrometers

Warren Consolidated Schools/Ameritech, Inc.
See story, page 102

Environment, energy and agriculture

Adam Opel AG
Reducing use of hazardous waste-causing materials

Consorcium for International Earth Science Information Network
Providing a gateway to databases to help with public policy decision-making

Marine Environmental Technology Operation
Monitoring to protect the aquatic ecosystem

Chesapeake Bay Program
See story, page 102

Weyerhaeuser Co.
Modeling 80-year tree-harvesting scenarios to protect owls and keep jobs

Finance, insurance and real estate

Bank of America
Automating the handling of 8 million transactions a day

Chicago Board of Trade
Handheld units let traders write in trade data, reducing paper

Family Max
On-line financial analysis for low-income clients who want to buy homes

Continued on page 102

Every June we take a break from reporting on technology as a purely money-saving, productivity-enhancing, competitive advantage-creating bunch of bits that can rocket a company to fame and fortune.

On the next three pages, you'll meet six of the 50 finalists for the Seventh Annual

★ 7th Annual Computerworld Smithsonian Awards



Computerworld Smithsonian
Awards, which honor applications that improve society and our lives. Information technology is helping the innovative heroes among us do the awe-inspiring. And when all is said and done, perhaps that is technology's greatest gift.

GOVERNMENT AND NONPROFITS

Database pairs kids and adoptive families

Patty, a 4-year-old African-American girl, was prenatally exposed to cocaine and other drugs. Her birth mother was HIV-positive, though Patty is not. Like other children locked in the foster care system, Patty was labeled "difficult" to adopt.

Patty was in foster care for two years before she was matched with a family via the computerized database system of the National Adoption Exchange (NAE), a program of the National Adoption Center. Typically, a child/family placement takes from several months to a few years, but the NAE was able to place Patty with her permanent family in only three months. No longer the withdrawn, timid child she was two years ago, Patty today participates in choir, jazz, ballet and tap dancing.

The NAE's database enables social workers to bring up possible matches quickly. "In no more than 10 seconds, I was able to print out five prospective children for Patty's adoptive mother to review," says

Karen Colalongo, regional child adoption coordinator at the NAE and Patty's social worker.

"When we first started out, we actually had a recipe file box where we kept color-coded index cards on families, children and matches," says MariAnne Clarke, deputy executive director of the NAE. Now, the Unix system has expanded to bulletin board services

and electronic mail for social workers nationwide to access.

Via E-mail, social workers can easily find information about interstate adoption, nontraditional adoption (such as single parents and transracial parents), disabilities and child welfare. They can also look beyond their local jurisdiction and place children in other states.

The NAE is working on an on-line program called "Faces of Adoption," which will be available on the Internet this summer at <http://www.adopt.org/adopt>.

— *By Joyce Chutchian-Ferranti, managing editor, special projects*

Making a difference, page 102



	FEMALE NAME Linda B. Jones	MALE NAME None
	DISABILITIES ACCEPTED: PHYSICAL: NONE MENTAL: NONE	EMOT. LEARN. MODERATE

Linda is always willing to go that extra mile for her children. As an experienced adoptive parent, she understands what is needed for a child to make a successful transition from foster care to a permanent family. Her daughters Sherita, 10, and Raquel, 8, adopted in 1992, were considered learning disabled and emotionally disturbed when they were placed in her home. Today they are the star pupils of their school and have shown few signs of the emotional problems that troubled them. From having been moved 12 times in foster care, Linda and her children are ready to expand their family—perhaps to include an African-American girl between 1 and 5 years old with moderate learning and emotional challenges.

Split-second database searching enabled social workers to match Linda Bates Jones' profile (see screen above) with that of Patty (see screen at right). In just three months, Patty (above, center) joined her new adoptive family (from left to right), Jones, Sherita and Raquel.

	NAME Patty A. Jones	DOB 1/2/91
	SEX F	ETHNICITY African American
	DISABILITIES	PHYSICAL: NONE MENTAL: NONE EMOTIONAL: NONE LEARNING: NONE

Patty is an alert and inquisitive child with a dimpled smile and warm brown eyes. She is developmentally on target and a true active. Singing and dancing are her favorite activities. Although Patty was exposed to cocaine in utero and tested HIV positive at birth, tests reveal that she has never contracted it and is in no danger of contracting AIDS. She has a history of asthma and ear infections, but is in good health. A one- or two-parent African-American family, with or without other children, is being sought.

GOVERNMENT AND NONPROFITS

Reuniting war-torn families

I smeta had not seen or heard from three of her children in 2½ years. Victims of war in the former Yugoslavia, the children were evacuated from their Mostar school during shelling, split up and sent to refugee centers in Croatia and Macedonia.

Then last December, after hearing of Operation reUNite—a new service by the United Nations High Commissioner for Refugees (UNHCR) that helps relatives locate missing children—Ismeta found herself at a computer, searching for her children. Quickly, she found her two boys, Azem, now 16, and Mujcina, 18, by their last name. But she could not find her daughter Zlata, now 20.



➤ Operation reUNite is working to reunite 5,500 children, including 2½-year-old Benjamin Smalbegovic (center) and his sister, Murisa, age 4 (right), with their parents. For now, the children are living with Mina Becar (left), a neighbor from their hometown of Tesanj, Bosnia-Herzegovina.

in Paris, where staff would enter children's biographical data and photos and produce CD-ROMs. The project became operational last August.

The latest CD-ROM, distributed in May, has data on nearly 5,500 children. The UNHCR maintains 11 centers in the former Yugoslavia where families can search for children. Laptops are also in use.

Ismeta is among the lucky few. Since Operation reUNite began last year, only 11 positive identifications have been made. There are anywhere from 10,000 to 40,000 children separated from their families, sources say. Many have no idea where their parents are.

But Casella is optimistic. "The numbers will increase in time," he says. —By Bruce Rayner, special projects editor

★
FINALIST
UN High Commissioner for Refugees

She searched on Zlata's birthplace. Then by age and gender. At last, Zlata's picture appeared on the screen—the problem was a misspelled last name. "Thank God they are all alive," Ismeta says.

Operation reUNite was the brainchild of Ken Dodd, director for international sales at Electronic Data Systems Corp.'s Business Process Systems and Services in Troy, Mich. Together with a handful of EDS volunteers, Dodd prototyped a system in early 1993.

Shortly after, Dodd met with Alexander Casella, coordinator for mass information at the UNHCR in Geneva, and the force behind Operation reUNite. They agreed to set up the system at the EDS office



➤ One of the major components of the Chesapeake Bay Program's 3-D integrated modeling system is current land use, on which researchers base what-if scenarios to predict the success of environmental cleanup actions

ENVIRONMENT, ENERGY AND AGRICULTURE

Modeling joins fight to clean up Chesapeake Bay

T he Chesapeake Bay has been an environmental nightmare. Years of runoff from surrounding agricultural and urban lands, sewage treatment plants and industrial sources so depleted the oxygen levels in the water that fish and vegetation have disappeared in great numbers.

The impact on the fishing industry has been great, closing a striped bass fishery, a shad fishery and decimating the oyster industry, says Fran Flanigan, executive director of the Alliance for the Chesapeake Bay.

The Chesapeake Bay Program—an effort of the Environmental Protection Agency (EPA) and the bay-area states of Maryland, Pennsylvania and Virginia—was created in 1983 to stem the bay's slide into biological wasteland. The program's goal is to reduce polluting nutrients in the 64,000-sq.-mile watershed area by 40% in five years.

Its main weapon? A sophisticated three-dimensional modeling system that helps researchers look at the effects of excess nutri-

ents on the water, estuary and air. The modeling system runs on Cray YMP and C-90 supercomputers from Cray Research, Inc.

These models let researchers look at the bay's past, present and future and construct what-if scenarios. For instance, researchers estimate that a 40% reduction of nutrients in the water will reduce the dead (or oxygenless) waters of the bay by 20%. If no action is taken, the dead waters will increase by 14%, says Lewis Linker, project coordinator at the U.S. EPA Chesapeake Bay Program. "The model has been helpful in teaching us how to pinpoint remedial actions," Flanigan says.

Those "remedial actions" include farm controls and sewage treatment plant upgrades, said Robert Percia-sepe, assistant administrator for water at the EPA.

Apparently the cleanup efforts are paying off. Rock fish, striped bass and some vegetation are returning to the bay, and authorities have eased restrictions on swimming and fishing.

—By Amy Malloy, intern

EDUCATION AND ACADEMIA

Multimedia extends school day—and kids don't mind

Twelve-year-old Amanda Hayden says she used to be bored with science. Not anymore. Amanda took part in a program that made learning fun. Using interactive television at home to do schoolwork, Amanda says, "you didn't think of it as learning, you thought of it as entertainment."

Like most school systems today, Amanda's in Warren, Mich., has been under pressure to keep testing scores high and technology current in the face of public dissatisfaction with government-funded education. Enter ThinkLink, a school-business partnership program that ran during the 1993-1994 school year in the Warren Consolidated Schools system.

The project was largely funded by a \$5 million grant from Ameritech, Inc., a Chicago-based cable TV operator trying to gain a foothold in the Michigan market. One hundred and fifty students at two of the 14 schools in the Warren area had the chance to tap into ThinkLink. The students started the program in the fourth grade and finished in the fifth.

ThinkLink enables students to access interactive TV programs at home by connecting to VCRs, laser discs and CD-ROMs via fiber-optic cable lines that connect to Ameritech's switching center. The multimedia learning programs were mapped to the students' math, language arts, science and social studies curriculum.

The program was a boon. Scores on the Michigan Education Assessment Program science test, which is given to fifth-graders across the state, showed that the students who participated in ThinkLink received 15% higher scores than those who did not.

But perhaps the best measure of the program's success was the students' response. "It made me understand more, and it made learning fun," Amanda says.

—By William Brandel, senior editor



➤ Amanda Hayden (front) was one of 150 fifth-grade students in Warren, Mich., who participated in a yearlong multimedia program that lets kids work on school curriculum at home. Mother, Jeanette, and brother, Bryan, work on their computer in the background.

Continued from page 101

New York Stock Exchange, Inc.
Flat-panel displays that present more complete trading information

The First National Bank of Chicago
Enabling bank staff to know exact status of customer accounts

Government and nonprofits

Indian and Northern Affairs Canada
Expanding government officials' knowledge of aboriginal populations

National Adoption Center
See story, page 101

Norwegian Police Data Processing Services
Global IS and electronic maps helped police with Lillehammer Olympics security

United Nations High Commissioner for Refugees
See story at left

U.S. Social Security Administration
Systems that enable the agency to hire more disabled workers

Manufacturing

Aircan International Ltd.
Computer simulation and animation help staff form aluminum car panels

Bayer AG
Integration of all departments' operations in a chemical plant onto a single supercomputer

Boeing Commercial Airplane Group, 777 Division
Digital specification of every part in the 777 aircraft so fuselage was accurate within one-thousandth of an inch

Cox Communications, Inc.
Speedy communications among 10 Phoenix firms

International Rectifier
Worldwide management of chip inventory and orders

Continued on page 105

★
FINALIST
EPA Chesapeake Bay Program Office

EACH BLINK OF AN EYE IS BARRAGED WITH CHOICE.



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in a special edition of Computerworld Client/Server Journal



The Magazine

Client/server. Where's it at in the real world? You'll find out in a special June 15 edition of Computerworld Client/Server Journal. With the expertise of Cambridge Technology Partners, a world renowned client/server consultancy, we surveyed more than 250 North American organizations to gauge their client/server prowess. Our special issue will list the 20 most effective users of client/server technology by measuring their:

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The Event

On June 15, at DCI's **Database & Client/Server World** in Boston, you're invited to a panel discussion at 9:30 that includes representatives from several of the Top 20 companies, the survey judges and moderator Alan Alper, editor of Computerworld Client/Server Journal. Hear firsthand what went into selecting the Top 20 and how these organizations made client/server work for them.

For more information on this panel, call (508) 470-3880.

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MEDICINE

System speeds matching of donor organs with patients

Every day in the U.S., eight people die waiting for an organ transplant. Every day, they die waiting for a surgeon to announce that a matching kidney or liver or heart has been located. Every day, the United Network for Organ Sharing (UNOS) tries to reduce this statistic.

All U.S. transplant centers belong to UNOS, a private, nonprofit corporation based in Richmond, Va. UNOS coordinates the placement of organs from cadaveric donors throughout the U.S., achieving this monumental mission by matching donor organs with patients (more than 38,000 to date) on waiting lists through an on-line system called Xpedite. They also provide the vital medical information about donor organs to all transplant centers nationwide.

"Historically, an organ procurement coordinator at the donor hospital made a series of individual phone calls to several transplant centers, according to a priority ranking of potential recipients," says David Klein,

★
FINALIST
United Network for Organ Sharing



Donated organs must be carefully preserved and must be transported within a matter of hours. "Organs can't live a long time on life support," says David Klein, director of computer services at the United Network for Organ Sharing. "The faster they get placed, the healthier they are."

director of computer services at UNOS. The coordinator would "repeat the process several times for each organ." These coordinators then had to wait, like the patients, to hear back from the transplant centers.

Klein says several hours could pass before hospitals could place an organ. "We needed a way to get donor information distributed to transplant centers quickly," he notes. UNOS turned to American Management Systems (AMS) in Fairfax, Va., for assistance. AMS' goal was to get information about matches to surgeons quickly and tie the information into legacy applications in hospitals across the country. "We needed to turn the sequential process of calling and recalling for each organ into a parallel process," says Mike Titmus, vice president of AMS.

Using Xpedite, which became fully operational in January, UNOS receives donor information via Notes from the donor site. The computer-matching system generates a prioritized list of potential recipients. UNOS then pages the listed transplant centers with SkyTel, Inc. pagers. Each transplant center accesses the central donor information database using Notes. The centers can also tap in by using the phone and Lotus Development Corp.'s PhoneNotes to get the information automatically faxed to them.

"Organs can't live a long time on life support," Klein says, "so the faster they get placed, the healthier they are."

Dr. Mark Aeder, director of transplantation at the Research Medical Center in Kansas City, Mo., says Xpedite greatly benefits the entire transplant community. "Xpedite will accelerate the timely placement of transplantable organs and, hopefully, optimize organ sharing."

—By Stewart Deck, new products writer



Continued from page 102

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United Network for Organ Sharing
See story at left

Science

Du Pont Co.
See story at right

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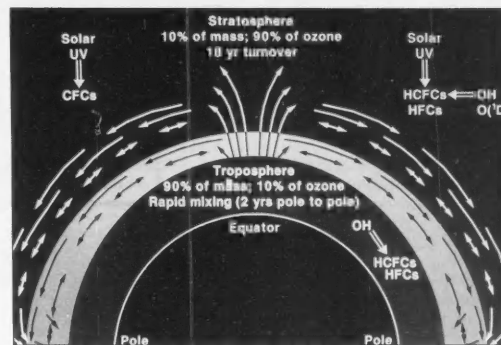
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SCIENCE

Say good-bye to ozone-wrecking chemicals



Du Pont's atmospheric model is being used to help design CFC alternatives that do not destroy ozone layers and minimize global warming conditions

When the world's top industrial nations signed the Montreal Protocol in 1987 — a treaty that called for a 50% reduction in the use of ozone-depleting chlorofluorocarbons (CFC) in the next 10 years — Du Pont Co. might have been expected to drag its feet.

After all, with nearly \$1 billion in annual sales from the manufacture of CFCs — which are used primarily as coolants in refrigerators and air conditioners — the Wilmington, Del.-based chemical giant had a lot at stake.

Instead, Du Pont has taken a proactive approach to the environmental problem and has led the charge to create CFC alternative compounds. For example, Du Pont volunteered to phase out its CFC production by the end of last year, but the Environmental Protection Agency later asked Du Pont to continue producing CFCs through the end of this year to fulfill national requirements.

"There's no question that Du Pont has been the leader in spearheading CFC alternative developments," says Professor Donald J. Wuebbles, department head of atmospheric sciences at the University of Illinois at Urbana-Champaign.

Computational modeling pioneer

In an effort to uncover CFC alternatives that have minimal impact on the environment, Du Pont began using sophisticated computational modeling techniques as early as the late 1970s. That's when scientific research first began to link the compounds with the destruction of the earth's ozone layer, which shields plant and animal life from the harmful effects of ultraviolet radiation.

Du Pont has relied on four generations of Cray Research, Inc. supercomputers to do its computational modeling since 1986, according to Dr. David Dixon, a research leader in central research and development at Du Pont. Much of the computer modeling and simulation is done using Silicon Graphics, Inc. workstations over a Digital Equipment Corp. VAX-cluster network.

The high-performance systems have helped Du Pont estimate the impact that CFC replacements, such as hydrochlorofluorocarbons (HCFC), might have on the environment.

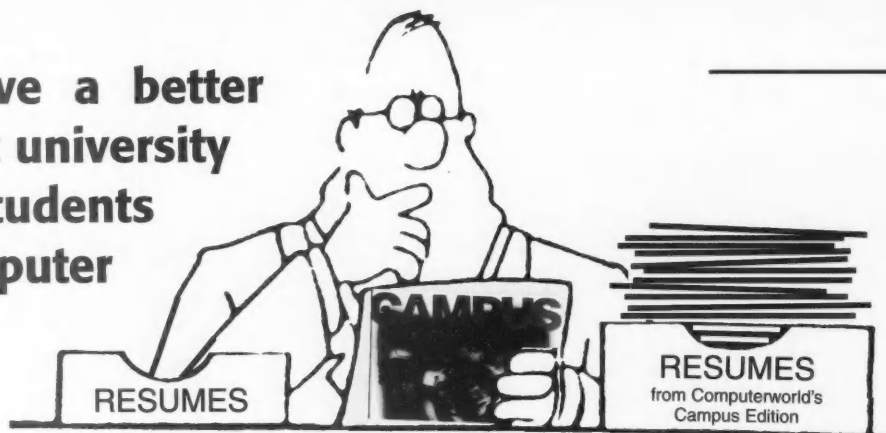
For example, Du Pont uses the computers to do atmospheric modeling to determine how HCFCs can be expected to react with solar energy in the stratosphere.

By using the computational modeling techniques to arrive at environmentally acceptable CFC alternatives, the chemical company has been able to put its HCFC plants on-line faster than it expected, according to Dixon.

—By Thomas Hoffman, senior editor

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Computer Careers

Question of the month:

What's the worst job you've ever had? The best? Send responses to: jnaze@cw.com or fax to: (508) 875-8931

By Bryan Scanlon and Amy Berman

McDonnell Douglas Aerospace won 46 of the 55 fixed-wing military aircraft awards in the Department of Defense's fiscal 1995 budget. So what?

So, the firm will be hiring 250 software engineers to meet demand on several projects, says James Diller, administrator of professional employment at the McDonnell Douglas Corp. division in St. Louis.

"Even though we've had some layoffs, we're always hiring for particular skills," Diller says. Specifically, programmers with Ada, C and C++ expertise are in highest demand for projects such as the F-15 Eagle, F/A-18 Hornet, the C-17 Transport and flight simulation programs.

In the intensely project-driven aerospace industry, new awards can spawn hundreds of job openings for information systems professionals. Once under way, many projects expand dramatically.

"There are always changes in the initial scope," says Jerome Haynesworth, director of human resources at Hughes Information Technology Corp. in Reston, Va., a \$2 billion division

of Hughes Aircraft Co. "You might need 200 people to get started and another 100 to help you hit another milestone."

The Hughes division is seeking software engineers with experience in Oracle, Unix, C++ and other object-oriented languages and will hire 300 IS people this year. Many will help design Unix front ends to Mosaic and other Internet browsers.

For aerospace companies, implementing an infrastructure that lets employees communicate more easily with customers and suppliers is a high priority. For Paul Hoedeman, chief information officer at Allied Signal Aerospace in Torrance, Calif., it is one of the primary business objectives. "Our job is to link the organization together and enable workflow within or even outside of the company," says Hoedeman about the 750-person IS department.

The firm has been hiring people with computer science skills since mid-1993 and expects to hire another 70 employees this year. Some will work directly with users, but candidates for senior posts will be evaluated on the effect they have had on business operations.

While some of the demand for skills is internal, aerospace firms are increasingly out-

JOBS in SPACE

Aerospace companies and their outsourcing providers scramble for highly specialized talent to fill current contracts

sourcing routine tasks. For example, McDonnell Douglas and Allied Signal have outsourced systems management to IBM's Integrated Systems Solutions Corp. (ISSC). ISSC project executives say the company always strives to expand its skills base.

"We manage all aspects of their computer environment, and we look for people with strong customer skills," says Andrea Roma, ISSC's project executive for the McDonnell Douglas account.

is in place, some of IS has been redeployed to implement the technology in other divisions. Meanwhile, Boeing recently announced 6,500 layoffs.

But whether you take a job inside or out, a diverse set of skills is considered key to continual redeployment on new projects.

"Engineers really have to understand the business process," says Larry Olson, director of IS for 747s, 767s and 777s at Boeing Commercial Airplane Group in Everett, Wash. "People

Seeking an IS job in aerospace? Learn Ada as well as C and C++. "Ada is needed for at least 80% of IS positions at McDonnell Douglas Aerospace, though most entry-level programmers don't learn the language in college," says James Diller, administrator of professional employment.

Most programmers learn Ada on the job, but internships are becoming increasingly available. For example, Embry-Riddle Aeronautical University in Daytona Beach, Fla., offers four-year programs for undergraduates that include two internships as well as course work in Ada, C and Unix.

Some firms are even partnering with vendors and integrators to help existing staff work with new technologies. For example, The Boeing Co. worked closely with IBM and Dassault Systèmes, a French software company, to create the new digital design process used on the Boeing 777. Now that the system

who have managed other business tasks and have a customer orientation and a technical background can work at Boeing and other companies very effectively."

Scanlon and Berman work at Corporate Ink, a communications firm in Newton, Mass.

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Cool change

You can find great change agents at every level of an organization — you just need to know where your power comes from

By Barbara M. Bouldin

Ten years ago, I enjoyed my first big win as a change agent. At the time, I was a project manager at AT&T Corp. assigned to introduce workstation application development tools to hundreds of develop-

ers. Today, I'm vice president of research and development at a commercial software company, moving its core products into client/server technology. While it's a different industry and I'm higher in the ranks, I still struggle with the change agent's role.

Typically, change agents enable people to implement new ideas or technologies. These changes can be as small as implementing a plan to better serve customers or as large as bringing about a corporate vision.

Fortunately, many of the lessons I've learned have remained the same over the years. For example, no matter where you are in the corporate hierarchy, you're capable of bringing about change. Second, while power achieved through rank in a company is important when facilitating change, grassroots support is essential.

Third, you can't make great leaping changes no matter who you are.

Here's how the change agent's role has evolved for me:

THEN: Influence was more important than the power associated with a high-ranking job.

After many years at AT&T, I was well connected. The information systems director and I served on the school board. I became friends with another manager based on a mutual passion for chess. My cousin worked in purchasing, and my neighbor was the firm's first PC trailblazer. All of these people were part of my in-

formal network, and I never hesitated to call upon them to expedite change. When the company implemented PC-based tools for analysis and design, we were developing MVS applications on mainframes using terminals. We needed to quickly obtain PCs, configure them and install the necessary software — a difficult task in an organization with a hefty bureaucratic process.

When I learned that the recommendation and purchase order were on the director's desk, I asked him at a school board meeting to expedite the paperwork. When the order hit purchasing, my cousin was on double alert to "baby it" along. In turn, I borrowed the PC guru from his boss (my friend) to jump-start our configuration and installation.

I cashed in chips whenever I encountered resistance. For example, when developers failed to see how development tools fit into our world, I created familiar examples. In turn, the developers couldn't ignore my help and advice because it was well grounded in shared history and experiences. I had the personal power to steadily progress my change effort.

The result? I shortened the cycle by weeks without any power derived from position.

NOW: Influence is still the key.

Today, I face new challenges as part of a senior management team. We're in the midst of moving to a new generation of core products squarely centered in client/server. I have opinions on how to best leverage our technical excellence. Moreover, my position affords distinct

advantages not available to me 10 years ago.

Now, I'm automatically granted a fair amount of "airtime" with executives and troops. Yet I must use that airtime as effectively as I did when I had little organizational clout.

To that end, I've spent many late nights developing a pragmatic reusable architecture. The objective is to develop a family of products that will guarantee a market advantage within the year. From there, I distilled the plan into a presentation to illustrate its value.

After securing the chief executive officer's approval for the plan, I turned my attention to mobilizing my own organization. As the leader, I made the goal and my vision of how to get us there unequivocally clear. But I remained a realist. People embrace change only if they have adopted the process as their own — no matter how high or low you are in the hierarchy.

I revealed the plan's details to managers and staff and gathered opinions, suggestions and finally acceptance. But it wasn't always easy to secure their willingness to accept compromise in the development process.

I made sure team members were given opportunities to understand the market considerations that drove the business as well as a chance to express their ideas. Eventually, we reached a consensus and created working models that included many homegrown constructs for development.

The result? While I had the clout to ruthlessly pursue change, I used my power to create an environment where everyone could influence the process. ■

Bouldin is vice president of research and development at Softworks, Inc. in Alexandria, Va., and author of *Agents of Change: Managing the Introduction of Automated Tools* (Prentice-Hall, 1989).

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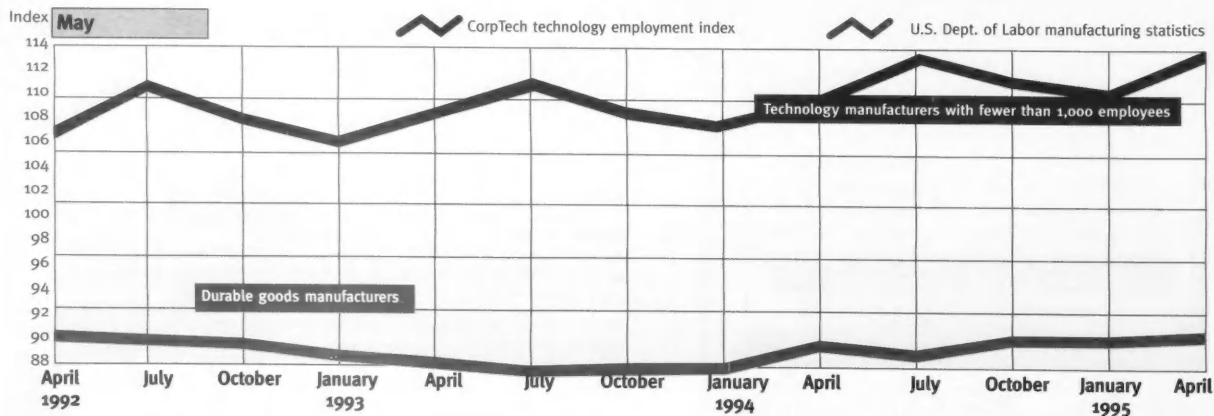
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BIGGER not always better

Integrated software packages strive to offer a balance between features and functionality

By Lynn Haber

Bigger is not necessarily better, especially when it comes to software suites. They cost more, eat up storage, require more training and are generally underused — at least that's the rationale behind the product category known as integrated software.

Commonly referred to as the "Works" category, integrated software includes programs such as Claris Corp.'s ClarisWorks 3.0, Microsoft Corp.'s Works for Windows and Novell, Inc.'s PerfectWorks 2.1.

Unlike suites that include stand-alone applications such as Microsoft's Office, integrated software consists of modules that do not operate independently. "Our goal is to achieve a balance of functionality and utility," says Sam Ye, product marketing manager at Novell.

Product bundling has made integrated software prevalent in the consumer market, but it has also achieved acceptance in the small business arena. Moreover, revenue climbed 6.6% between 1993 and 1994, says Nicole Roth, senior analyst at International Data Corp. in Framingham, Mass.

Because the products are easy to use

and require little training, they are geared toward first-time and occasional users. "We try to focus on the right set of features for our target market — features the user will likely utilize all of the time vs. only some of the time," says Edith Gong, product marketing manager at Claris.

ClarisWorks 3.0, for example, includes a word processor, spreadsheet with charting, database, graphics and painting as well as presentation capabilities. While medium-size to large companies are not the target market for the company's product, Gong says corporate interest has increased.

The interest may be because of the size and systems requirements of Works packages, according to analysts. For example, full installation of Works for Windows requires a 14M-byte hard drive and 4M bytes of RAM. Compare that with the company's Office product (the Professional version) that requires a 58M-byte hard drive and 8M bytes of RAM. Maximum installation, including all files, is 82M bytes.

Traditional arguments against using Works products have been their lack of features, but the fact that recent versions of suite products are bloated and growing bigger has not gone unnoticed.

Another concern is the integration with office suite applications. Like other vendors of Works products, Claris tries to provide the latest translators for the leading office automation products.

"Integration between the Works and suite products is getting better, but it isn't always easy," according to Brian Fukuda, an industry analyst at Data-

SHOPPING FOR "WORKS" PACKAGES

While industry watchers say they expect the integrated software market to flourish, it's being squeezed at the high end by price reductions in the suite product category. Moreover, the low end must contend with new entrants such as Microsoft's Bob.

For now, vendor choice is limited, and the following three packages are garnering the most attention. They cost less than \$100, so there's little room for price reductions, and opportunity for product differentiation is minimal, analysts say.

• **ClarisWorks for Windows.** Modules: Word processing, spreadsheet, database, presentation, draw/paint. Price: \$99. Minimum systems requirements: 386DX/25MHz-based PC or higher; 4M bytes of RAM; 10M-byte hard disk for full installation. Claris Corp., Santa Clara, Calif. (408) 727-8227.

• **Works for Windows.** Modules: Word processing, spreadsheet, database, charting, drawing. Price: \$99.95. Minimum systems require-

ments: 386SX-based PC or higher, 4M bytes of RAM, 14M-byte hard disk for full installation. Microsoft Corp., Redmond, Wash. (800) 426-9400.

• **PerfectWorks 2.1.** Modules: Word processing, spreadsheet, database, paint, draw, communications. Price: \$99. Minimum systems requirements: 386-based PC, 4M bytes of RAM and 13.5M-byte hard disk for full installation. Novell, Inc., Orem, Utah (800) 451-5151.

COMINGS AND GOINGS

• **Corel Corp.** is expected to introduce a 32-bit version of its recently available Corel CD Office Companion in the third quarter of this year. It will reportedly include an integrated word processor, spreadsheet and database. Ottawa (613) 728-8200.

• **SoftKey International, Inc.** has discontinued development of its WindowsWorks product, although it may still be available on retailers' shelves. Cambridge, Mass. (617) 494-1200.

quest, Inc. in San Jose, Calif.

In addition, Novell is reportedly going the extra mile to achieve integration between PerfectWorks and stand-alone office automation applications, offering the capability to use and read other file formats, according to Roth.

PerfectWorks 2.1 for Windows is scheduled to ship this month and is being positioned as a bridge that will enable users to upgrade to stand-alone or suite products, Ye says.

But the choice between a suite or a

Works product must be based on user needs and the desired level of product sophistication.

However, the reality of today's market is such that most medium-size to large companies choose to standardize on best-of-breed office automation applications. "For most companies, Works products are not suitable because they lack the functionality that is required on a day-to-day basis," Roth says. ■

Haber is a freelance writer in Boston.

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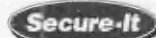
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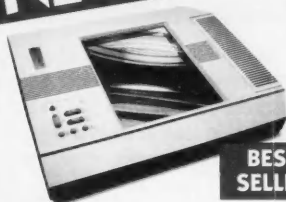
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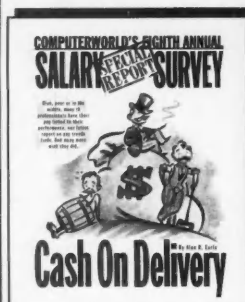
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Losers

Percent

INACOMP INC.	50.0	NETWARG INC.	-15.7
ENCORE COMPUTER CORP.	25.8	NETWORK COMPUTING DEVICES	-13.6
MAGIC SOFTWARE ENTERPRISES	25.0	APPLIX INC.	-12.3
RAINBOW TECHNOLOGIES INC.	24.75	EXCOM INC. (L)	-12.1
INFORMATION RESOURCES	18.6	COMPUTER NETWORK TECH.	-9.2
RADISYS INC.	12.8	RDS SYSTEMS	-9.1
TECHNOLOGY (H)	12.0	SOFTECH INTERNATIONAL INC.	-7.9
PENRIL DATA COMM NETWORKS	10.0	TELOCOM SYSTEMS	-7.9

Dollar

US ROBOTICS	4.75	COMPUTER ASSOCIATES	-5.00
RAINBOW TECHNOLOGIES INC.	4.38	MICROSOFT CORP.	-4.00
AT&T CORP.	3.00	APPLIX INC.	-2.80
STRATACOM INC.	2.75	NETWARG INC.	-2.63
FAIR TECHNOLOGY (H)	2.63	SUN MICROSYSTEMS INC.	-2.58
INFORMATION RESOURCES	2.44	SOFTECH INTERNATIONAL INC.	-2.25
ASCEND COMMUNICATIONS	2.25	ACORE SYSTEMS INC.	-1.88
HYPERION SOFTWARE CORP.	2.25	COMPU\$A INC.	-1.75

Dollar

US ROBOTICS	4.75	COMPUTER ASSOCIATES	-5.80
RAINBOW TECHNOLOGIES INC.	4.38	MICROSOFT CORP.	-4.00
AT&T CORP.	3.00	APPLIX INC.	-2.88
STRATACOM INC.	2.75	NETMANAGE INC.	-2.63
FRAME TECHNOLOGY(H)	2.63	SUN MICROSYSTEMS INC.	-2.50
INFORMATION RESOURCES	2.44	SOFTWARE INTERNATIONAL INC.	-2.25
ASCEND COMMUNICATIONS	2.38	ADOBE SYSTEMS INC.	-1.88
HYPERION SOFTWARE CORP.	2.25	COMPU\$A INC.	-1.75

Tech stocks on chopping block

Stocks in the technology sector got hammered early last week, although the rest of the market performed fairly well. However, by the end of the week, most shares had started back on their trend upward again.

That activity seems to be a combination of profit taking and a jittery reaction to economic news, analysts said.

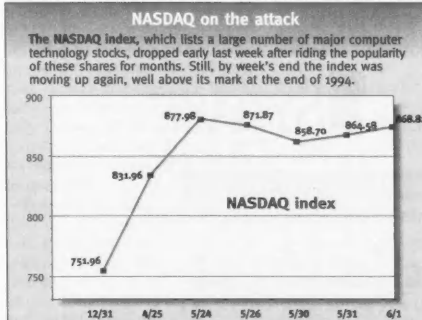
"It is a bump in the road," said Bruce Hadburg, an analyst at Raymond James & Associates, Inc. in St. Petersburg, Fla., adding that he thinks technology stocks are still strong. "Corporate profits are basically decent, and consumers are still buying PCs," he said.

David Benhaim, vice president of First Albany Corp. in Boston, said the constant influx of computer technology into the nation's infrastructure is still in its early stages, and there is a lot of growth left in the industry. This long-term view, he added, could stabilize many technology shares.

Most of the shares that took a hit last week were large, well-known stocks such as **Intel Corp. (INTC)**, **Oracle Corp. (ORCL)** and **Computer Associates International, Inc. (CA)**, Benham said. On the other hand, smaller capitalized stocks such as **MapInfo Corp. (MAPS)** and **Project Software & Development, Inc. (PSDI)** were largely untouched because although they have potential for long-term growth, it is harder for them to turn a fast profit, he said.

Hadburg said the wide array of technologies represented on the stock market must be better integrated and better understood by investors before they blindly put their money into the latest hot technology.

"Isn't the market supposed to look ahead for six to nine months? I think they have abandoned that for technology," he said. — *Tim Ouellette*

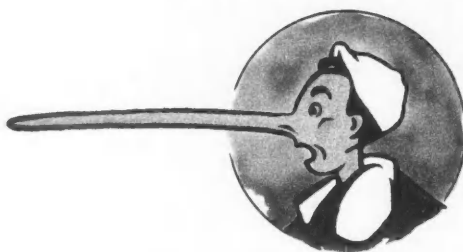
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June 2 Stock Ticker

52-WEEK RANGE						JUNE 2 WKLY NET WGT			CHNG			52-WEEK RANGE						JUNE 2 WKLY NET WGT			CHNG		
1PM						3PM			WEEKLY CHG			1PM						3PM			WEEKLY CHG		
Communications and Network Services																		UP 0.61%					
OTC	69.25	20.13	3COM CORP.	67.00	0.00	0.0	OTC	58.50	25.63	LOTUS DEVELOPMENT	56.00	-0.63	-2.0	OTC	68.88	7.88	MAIL SOFTWARE ENTERPRISES	31.00	1.63	25.0			
NYS	40.88	17.88	AMERICAN TELECOM. CORP.	41.88	0.00	0.0	OTC	14.50	6.75	MANUFACTURING GROUP INC.	11.00	-0.50	-4.3	NYS	40.88	17.88	AMERICAN TELECOM. CORP.	41.88	0.00	0.0			
OTC	57.00	47.25	AT&T	51.13	1.50	3.0	OTC	3.63	1.44	MATHSOFT	3.00	0.13	4.3	OTC	43.25	5.61	ASCEND COMMUNICATIONS	27.38	-1.63	-5.6			
OTC	43.25	5.61	ASCEND COMMUNICATIONS	41.88	2.38	6.0	OTC	33.50	6.75	MACFACS ASSOCIATES	22.00	-1.63	-5.6	OTC	57.00	47.25	AT&T	51.13	1.50	3.0			
OTC	19.25	12.75	BANYAN SYSTEMS INC.	16.50	0.13	0.8	OTC	20.00	10.75	MACRO FOCUS	17.00	-0.75	-4.3	OTC	43.25	5.61	ASCEND COMMUNICATIONS	41.88	2.38	6.0			
OTC	40.00	18.63	BAV NETWORKS INC.	38.00	-0.13	-0.3	OTC	20.00	10.75	MICRO FOCUS	17.00	-0.75	-4.3	OTC	19.25	12.75	BANYAN SYSTEMS INC.	16.50	0.13	0.8			
NYS	58.28	48.38	BELL ATLANTIC CORP.	55.13	1.38	2.6	OTC	2.00	0.63	MICROIMAGE INC.	6.19	-0.60	-10.7	NYS	58.28	48.38	BELL ATLANTIC CORP.	55.13	1.38	2.6			
OTC	61.50	50.00	BELL TELEPHONE CORP.	57.25	1.88	3.2	OTC	8.00	4.63	MIDWAY CORP.	14.13	-2.63	-15.7	OTC	61.50	50.00	BELL TELEPHONE CORP.	57.25	1.88	3.2			
NYS	22.25	10.00	BELL, BERANEK & NEWMAN	17.25	-0.38	-2.1	OTC	22.50	5.63	NETMANAGE INC.	6.19	-0.60	-10.7	NYS	22.25	10.00	BELL, BERANEK & NEWMAN	17.25	-0.38	-2.1			
OTC	19.75	9.00	BROOKTRUFT TECHNOLOGY	15.25	0.00	0.0	OTC	28.50	22.66	ORACLE CORP.	15.88	-0.50	-1.4	OTC	19.75	9.00	BROOKTRUFT TECHNOLOGY	15.25	0.00	0.0			
OTC	19.75	9.00	BROOKTRUFT TECHNOLOGY	15.25	0.00	0.0	OTC	28.50	22.66	ORACLE CORP.	15.88	-0.50	-1.4	OTC	19.75	9.00	BROOKTRUFT TECHNOLOGY	15.25	0.00	0.0			
OTC	23.50	10.00	CENTRIMARK COMMUNICATIONS	12.75	-1.00	-7.3	OTC	14.50	5.00	PARATECH TECHNOLOGY	12.75	-0.25	-1.9	OTC	23.50	10.00	CENTRIMARK COMMUNICATIONS	12.75	-1.00	-7.3			
OTC	50.50	20.00	CHIPCOM CORP.	21.63	1.50	7.5	OTC	19.75	14.50	PEOPLESOP	52.25	-0.25	-0.5	OTC	50.50	20.00	CHIPCOM CORP.	21.63	1.50	7.5			
OTC	10.88	5.13	CISCO SYSTEMS INC.	7.75	-1.00	-9.3	OTC	25.25	12.00	PLATINUM TECHNOLOGY	16.56	-0.50	-2.9	OTC	10.88	5.13	CISCO SYSTEMS INC.	7.75	-1.00	-9.3			
OTC	13.00	6.13	COMPRESSION LABS INC.	8.88	-0.56	-6.1	OTC	25.25	12.00	PLATINUM TECHNOLOGY	16.56	-0.50	-2.9	OTC	13.00	6.13	COMPRESSION LABS INC.	8.88	-0.56	-6.1			
OTC	10.88	5.13	CISCO SYSTEMS INC.	7.75	-1.00	-9.3	OTC	25.25	12.00	PLATINUM TECHNOLOGY	16.56	-0.50	-2.9	OTC	10.88	5.13	CISCO SYSTEMS INC.	7.75	-1.00	-9.3			
OTC	4.31	2.13	DATA SWITCH CORP.	4.25	-0.19	-4.6	OTC	5.25	1.88	QUARTERBOARD CORP.	8.35	-0.38	-4.6	OTC	4.31	2.13	DATA SWITCH CORP.	4.25	-0.19	-4.6			
OTC	32.38	17.88	DSC COMMUNICATIONS	38.44	-1.28	-3.2	OTC	22.63	9.50	RAINBOW TECHNOLOGIES INC.	22.63	0.38	24.0	OTC	32.38	17.88	DSC COMMUNICATIONS	38.44	-1.28	-3.2			
OTC	45.00	27.50	FORSYTH SYSTEMS INC.	26.25	-0.25	-0.9	OTC	24.00	10.00	RASTERIOS	24.00	0.00	0.0	OTC	45.00	27.50	FORSYTH SYSTEMS INC.	26.25	-0.25	-0.9			
NYS	38.38	29.50	GENERAL DATA COMM. INDUS.	37.75	-0.88	-7.5	OTC	6.13	2.88	ROSS SYSTEMS	3.75	-0.38	-9.1	NYS	38.38	29.50	GENERAL DATA COMM. INDUS.	37.75	-0.88	-7.5			
NYS	38.38	29.50	GTC CORP.	33.25	-0.31	-0.9	OTC	12.00	5.00	SAPHEUS INT'L. CORP. N.Y.	3.13	-0.13	-4.2	NYS	38.38	29.50	GTC CORP.	33.25	-0.31	-0.9			
OTC	11.00	7.00	ITT CORP.	11.00	0.75	6.8	OTC	10.75	0.75	SPIFF INTERNATIONAL INC.	3.13	-0.13	-4.2	OTC	11.00	7.00	ITT CORP.	11.00	0.75	6.8			
OTC	25.88	12.75	MCI COMM. & INFO. CORP.	20.00	0.38	1.9	OTC	2.56	2.88	STANDARD PUBLISHING CORP.	3.75	-0.25	-7.1	OTC	25.88	12.75	MCI COMM. & INFO. CORP.	20.00	0.38	1.9			
OTC	15.75	5.50	MICRO COMM. & INFO. CORP.	15.75	0.00	0.0	OTC	12.50	5.00	STATE OF THE ART	10.25	-0.19	-1.8	OTC	15.75	5.50	MICRO COMM. & INFO. CORP.	15.75	0.00	0.0			
OTC	12.63	5.19	MICROCOM INC.	12.63	0.00	0.0	OTC	58.88	8.00	STERLING SOFTWARE CORP.	14.44	-0.06	-0.4	OTC	12.63	5.19	MICROCOM INC.	12.63	0.00	0.0			
OTC	10.50	4.00	NETRIX CORP.	7.13	-0.25	-3.4	OTC	15.00	3.63	STRUCT. DYNAMICS RESEARCH	10.25	-0.06	-0.4	OTC	10.50	4.00	NETRIX CORP.	7.13	-0.25	-3.4			
OTC	8.63	3.25	NETWORK COMPUTING TECH.	6.38	1.00	13.4	OTC	59.75	19.88	SVBACE INC.	22.25	-0.25	-1.1	OTC	8.63	3.25	NETWORK COMPUTING TECH.	6.38	1.00	13.4			
OTC	27.88	0.50	NEWBORG INC.	27.88	0.50	2.1	OTC	52.00	2.88	SYNATECH CORP.	26.00	-0.06	-0.2	OTC	27.88	0.50	NEWBORG INC.	27.88	0.50	2.1			
OTC	30.63	14.25	NETWORK GENERAL	25.13	0.00	0.0	OTC	57.25	38.00	SYNOPSYS	56.50	-0.38	-0.7	OTC	30.63	14.25	NETWORK GENERAL	25.13	0.00	0.0			
NYS	43.75	26.50	NOVATEL	37.13	-2.13	-6.1	OTC	30.00	10.63	SYSTEM SOFTWARE ASSOCI.	25.25	-0.06	-0.2	NYS	43.75	26.50	NOVATEL	37.13	-2.13	-6.1			
OTC	10.00	17.63	NORTHSTAR TECHNOLOGY LTD.	17.63	0.00	0.0	OTC	24.00	10.63	SYSTEM SOFTWARE ASSOCI.	25.25	-0.06	-0.2	OTC	10.00	17.63	NORTHSTAR TECHNOLOGY LTD.	17.63	0.00	0.0			
OTC	23.25	13.38	NOVELL INC.	19.25	-0.75	-3.8	OTC	30.00	7.88	VIEWLOGIC SYSTEMS	10.25	-0.13	-1.2	OTC	23.25	13.38	NOVELL INC.	19.25	-0.75	-3.8			
NYS	43.13	35.38	NYNEX CORP.	41.75	1.38	3.4	OTC	22.00	10.75	VMARE SOFTWARE INC.	16.00	-0.13	-0.8	NYS	43.13	35.38	NYNEX CORP.	41.75	1.38	3.4			
OTC	40.00	15.50	OCTEL COMMUNICATIONS CORP.	37.63	-0.13	-0.3	OTC	15.00	13.13	WALTEK SOFTWARE SYSTEMS	18.00	-0.25	-1.4	OTC	40.00	15.50	OCTEL COMMUNICATIONS CORP.	37.63	-0.13	-0.3			
OTC	25.00	6.00	OPTICAL DATA SYSTEMS INC.	22.75	-0.25	-1.1	OTC	55.16	16.75	WALL DATA INC.	18.00	-0.25	-1.4	OTC	25.00	6.00	OPTICAL DATA SYSTEMS INC.	22.75	-0.25	-1.1			
OTC	4.75	2.13	PENRIL DATA COMM. NETWORKS	4.13	0.38	10.0	OTC	18.25	9.13	WAM LABORATORIES INC.	13.13	0.00	0.0	OTC	4.75	2.13	PENRIL DATA COMM. NETWORKS	4.13	0.38	10.0			
OTC	59.13	11.25	PERCOM FUTURE	59.13	0.00	0.0	OTC	18.25	9.13	WAM LABORATORIES INC.	13.13	0.00	0.0	OTC	59.13	11.25	PERCOM FUTURE	59.13	0.00	0.0			
OTC	8.13	2.13	PROTECH INC.	6.25	0.00	0.0	OTC	18.25	9.13	WAM LABORATORIES INC.	13.13	0.00	0.0	OTC	8.13	2.13	PROTECH INC.	6.25	0.00	0.0			
OTC	7.50	2.75	RACOTEK INC.	5.63	-0.25	-4.7	NYS	37.63	22.25	ADVANCED MICRO DEVICES	34.38	0.50	1.5	OTC	7.50	2.75	RACOTEK INC.	5.63	-0.25	-4.7			
OTC	24.88	16.31	SCIENTIFIC ATLANTA INC.	19.25	-0.38	-1.9	NYS	37.63	22.25	ADVANCED MICRO DEVICES	34.38	0.50	1.5	OTC	24.88	16.31	SCIENTIFIC ATLANTA INC.	19.25	-0.38	-1.9			
NYS	46.25	39.25	SOUTHWESTERN BELL CORP.	45.00	1.13	2.6	OTC	49.58	21.63	AT&T CORP.	42.75	1.00	6.7	NYS	46.25	39.25	SOUTHWESTERN BELL CORP.	45.00	1.13	2.6			
OTC	14.00	25.00	SPEAR ELECTRONICS INC.	14.00	25.00	0.0	OTC	49.58	21.63	AT&T CORP.	42.75	1.00	6.7	OTC	14.00	25.00	SPEAR ELECTRONICS INC.	14.00	25.00	0.0			
OTC	31.63	13.38	STANDARD MICROSYSTEMS CORP.	18.13	-0.13	-0.7	OTC	55.25	38.00	CIRCUIS LOGIC	54.00	2.00	3.8	OTC	31.63	13.38	STANDARD MICROSYSTEMS CORP.	18.13	-0.13	-0.7			
OTC	47.00	10.00	STRATACOM CORP.	41.00	2.75	7.2	OTC	37.25	15.50	CYPRESS SEMICONDUCTOR CORP.	35.00	1.31	6.5	OTC	47.00	10.00	STRATACOM CORP.	41.00	2.75	7.2			
OTC	14.00	13.00	TELECOM. CORP. OF AMERICA	13.00	0.00	0.0	OTC	37.25	15.50	CYPRESS SEMICONDUCTOR CORP.	35.00	1.31	6.5	OTC	14.00	13.00	TELECOM. CORP. OF AMERICA	13.00	0.00	0.0			
OTC	89.25	24.00	US ROBOTICS	89.25	24.00	5.6	OTC	31.13	14.75	INTEGRATED SIGNAL SYSTEMS CORP.	30.00	1.00	3.4	OTC	89.25	24.00	US ROBOTICS	89.25	24.00	5.6			
NYS	43.38	34.63	US WEST INC.	40.88	1.38	3.5	OTC	119.63	56.13	INTEL CORP.	117.13	0.63	0.5	NYS	43.38	34.63	US WEST INC.	40.88	1.38	3.5			
OTC	10.00	10.00	VERICORP.	10.00	0.13	-1.2	OTC	64.38	64.38	INTEC CORP.	64.38	0.00	0.0	OTC	10.00	10.00	VERICORP.	10.00	0.13	-1.2			
OTC	28.00	8.00	XYLOGICS INC.	22.75	-0.50	-2.2	OTC	35.13	15.50	LATTICE SEMICONDUCTOR	32.63	-0.38	-1.1	OTC	28.00	8.00	XYLOGICS INC.	22.75	-0.50	-2.2			
PCs and Workstations																		UP 0.76%					
OTC	6.13	3.50	ADVANCED LOGIC RESEARCH	5.88	-0.13	-2.1	OTC	33.00	14.50	SERIAL SEMICONDUCTOR	29.38	-0.75	-2.5	OTC	6.13	3.50	ADVANCED LOGIC RESEARCH	5.88	-0.13	-2.1			
OTC	19.25	10.38	AST RESEARCH INC.	18.13	-0.06	-0.3	OTC	32.13	14.50	SERIAL SEMICONDUCTOR	29.38	-0.75	-2.5	OTC	19.25	10.38	AST RESEARCH INC.	18.13	-0.06	-0.3			
NYS	44.38	29.50	COMPAQ COMPUTER CORP.	40.38	-0.13	-0.3	OTC	30.13	10.25	VLSI TECHNOLOGY	27.63	0.88	3.4	NYS	44.38	29.50	COMPAQ COMPUTER CORP.	40.38	-0.13	-0.3			
OTC	16.25	10.00	COMPAQ COMPUTER CORP.	16.25	0.13	0.7	OTC	5.25	1.78	WEITEK	4.75	0.25	5.6	OTC	16.25	10.00	COMPAQ COMPUTER CORP.	16.25	0.13	0.7			
OTC	25.25	9.25	GATEWAY 2000 INC.	18.00	-0.25	-1.4	OTC	97.00	29.00	WESTERN DIGITAL CORP.	88.00	-0.63	-0.7	OTC	25.25	9.25	GATEWAY 2000 INC.	18.00	-0.25	-1.4			
NYS	72.50	35.94	HEWLETT-PACKARD CO.	69.38	1.75	2.6	OTC	97.00	29.00	WESTERN DIGITAL CORP.	88.00	-0.63	-0.7	NYS	72.50	35.94	HEWLETT-PACKARD CO.	69.38	1.75	2.6			
OTC	16.25	10.00	HEWLETT-PACKARD CO.	16.25	0.50	3.1	OTC	37.25	37.25	ZILOG INC.	37.25	0.00	0.0	OTC	16.25	10.00	HEWLETT-PACKARD CO.	16.25	0.50	3.1			
NYS	40.13	18.75	SHOGUN GRAPHICS	38.88	1.25	3.3	OTC	37.25	37.25	ZILOG INC.	37.25	0.00	0.0	NYS	40.13	18.75	SHOGUN GRAPHICS	38.88	1.25	3.3			
OTC	50.50	18.25	SUN MICROSYSTEMS INC.	44.88	-2.50	-5.3	OTC	37.25	37.25	ZILOG INC.	37.25	0.00	0.0	OTC	50.50	18.25	SUN MICROSYSTEMS INC.	44.88	-2.50	-5.3			
OTC	12.38	33.38	TANDY CORP.	46.50	-0.38	-0.8	OTC	37.25	37.25	ZILOG INC.	37.25	0.00	0.0	OTC	12.38	33.38	TANDY CORP.	46.50	-0.38	-0.8			
Large Systems																		UP 0.29%					
ASE	13.63	5.25	AMDARI CORP.	12.63	-0.56	-4.3	ASE	4.75	1.38	CONSIGNTECH CORP.	3.94	-0.06	-1.6	ASE	13.63	5.25	AMDARI CORP.	12.63	-0.56	-4.3			
NYS	8.88	3.63	CONVEY COMPUTER (I)	3.75	-0.13	-3.2	NYS	15.00	9.00	CONNER PERIPHERALS	13.50	-0.50	-3.8	NYS	8.88	3.63	CONVEY COMPUTER (I)	3.75	-0.13	-3.2			
NYS	24.38	14.63	CRAY RESEARCH INC.	23.38	-0.63	-2.7	NYS	15.00	9.00	CONNER PERIPHERALS	13.50	-0.50	-3.8	NYS	24.38	14.63	CRAY RESEARCH INC.	23.38	-0.63	-2.7			
NYS	12.00	6.75	DATA GENERAL CORP.	7.88																			

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Stealth users

CONTINUED FROM COVER 1

4.x, a stealth user who breaches security on one file server can run rampant through the entire network.

"It's clearly a problem — and an unnerving one for network administrators — because there's no easy way to track the stealth user," said Charles Rose, principal at Roseware, a software development and consulting firm in Asheville, N.C.

Willy Donahoo, Novell's director of product marketing for NetWare, last week acknowledged that stealth users pose a problem for network administrators who are not careful about assigning supervisory rights. That is because NetWare 4.x does not allow administrators to grant narrowly defined rights, such as just the ability to change passwords, Donahoo said.

Additional capabilities

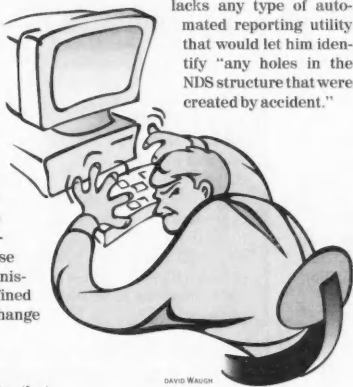
"We will provide users with utilities that give them enhanced reporting capabilities so they can more easily ferret out stealth users," Donahoo said. Novell also plans to deliver more levels of administration, which will allow managers to give users varying levels of administrative functionality without compromising network security.

But Novell has no set delivery date for these utilities. So, for the time being, network administrators are on their own. However, there is at least one NetWare security product available today for users

(see related story below).

The specter of stealth users insidiously working their way through all the branches in NDS is raising alarm among users on Novell's NetWare forums on CompuServe.

One user characterized the situation as "mind-boggling," while another lamented the fact that Novell currently lacks any type of automated reporting utility that would let him identify "any holes in the NDS structure that were created by accident."



DAVID WADEN

"I realize that in some cases you would want to hide various parts of the NDS [tree], but I still should be able to identify these hidden intersections," said the administrator who requested anonymity.

Users and security experts agreed that NetWare 4.x — with its advanced NDS component — is inherently secure. But they cautioned that granting administrative rights to anyone but the most trusted individuals can be asking for trouble.

The directory services component

stores network items such as user names, locations, security access rights and other descriptive information in a distributed database.

When a network administrator grants supervisory or administrative privileges to others, those people have the ability to modify their own trustee-assigned privileges, access rights and objects, said Robert Kane, president of Intrusion Detection, Inc. in New York, which specializes in security software detection packages. "Using the trustee assignments, a malicious individual could then cut off basic Browse and object scanning capabilities and become suddenly invisible," he explained.

Organizationwide results

Mike Jepsen, network manager at Medtronics, Inc. in Fridley, Minn., the world's largest pacemaker manufacturer, estimated that fewer than 1% of the 6,000 NetWare users in his organization — or about 20 people — would have the know-how to get around administrative security.

"But it only takes one stealth user to cause trouble, which can reverberate through an entire organization," Jepsen said.

Tracking the stealth user and unmasking his identity is a tedious, manual process in which the network administrator must search every network nook and cranny to locate anything that appears to be hidden or has unusual rights that run on a regular basis.

The other method for catching a stealth user is to design a custom utility written using Novell's AppWare, a daunting and time-consuming task for everyone but AppWare developers.

Security concerns

In the absence of a reporting utility from Novell that is capable of detecting stealth users, common sense and good security practices are still a network administrator's best defenses.

Mike Jepsen, network manager at Medtronics, Inc., and Robert Kane, president of Intrusion Detection, strongly advise that administrators grant property rights, not object rights, to users.

Of the two options in property rights, never grant users "all properties," Jepsen said. That option gives users the ability to do whatever they want and change the properties of the object. "With access to the 'Add-Self' option, for instance, users could make themselves NetWare administrators," Jepsen said.

Instead, administrators should choose selected properties, which grants users specific property rights and denies access to everything but the selected property.

Jepsen and Kane also recommend the following:

- Only assign supervisory rights to qualified, trusted administrators.
- Use the built-in auditing in NetWare 4.x to monitor all users' activities.
- Get the proper training and read the manual.

—Laura DiDio

StrataCom moves in on ATM market

CONTINUED FROM COVER 1

work, according to Hindin.

John Boyd, chief networking technologist at Northeast Utilities in Berlin, Conn., already uses both the StrataCom IPX and BPX switches and applauds StrataCom's move into the ATM market.

"We like the fact they're moving into ATM; StrataCom was doing cell relay in the T-1 marketing when everyone said it was impossible," Boyd said. "It was great practice for their ATM efforts since it proved StrataCom could successfully implement delay management at low speeds. So doing it at OC/3 ATM and T-3 speeds should be a natural progression."

The new IGX melds the best features of both the earlier Integrated Packet Exchange (IPX) 32M bit/sec. entry-level cell switch and the Broadband Packet Exchange (BPX) 9.6G-bit cell-matrix backbone switch. The IGX is available in either a

16- or 32-slot configuration. It incorporates advanced features such as silence suppression, 4-to-1 voice compression, 2-to-1 data compression and Auto-Route and Fore-Sight congestion management capabilities.

The Fore-Sight facility, for instance, buffers information to ensure that no data is lost during peak usage periods, the sources said.

Ethernet, Token Ring and Fiber Distributed Data Interface LAN connections are supported via the NetEdge Systems, Inc. Edge Connect ATM router, which StrataCom resells.

The StrataCom IGX switch is available now. Prices range from \$26,000 to \$300,000, depending on configuration.



Sizzling switch

StrataCom's Integrated Gigabit Exchange switch includes the following:

- 1.2G bytes of aggregate bandwidth
- Support for voice, data and video
- Congestion management capabilities buffer information so no data is lost
- Compatibility with existing StrataCom IPX and BPX switches
- Support for evolving ATM Forum class of service designations including available bit rate, continuous bit rate, unspecified bit rate and the two classes of variable bit rate
- List prices range from \$26,000 to \$300,000
- Available now

Utility detects stealth users

By Laura DiDio

A recently released upgrade to Intrusion Detection, Inc.'s security utility reportedly can detect stealth users and identify potential gaps in businesses' security by automatically scanning a Novell, Inc. NetWare 4.x network and its directory services tree.

Currently, it is the only such program that can scan and detect for stealth users, said Robert Kane, Intrusion Detection's president.

Kane Security Analyst (KSA) 2.0 is a Windows-based software utility that performs a security review of NetWare 3.x and 4.x LANs. It reviews six categories of security, including password strength, access control, account restrictions, system monitoring, data integrity and data confidentiality.

KSA 2.0 also does not require a NetWare Loadable Module (NLM). This is a big advantage because NLMs can consume anywhere

from 10K bytes to multiple megabytes of memory, Kane said.


"KSA is totally passive. It doesn't impact the file server or consume memory," Kane said.

Just not the same

While Novell has fine-tuned security under NetWare 4.x, it differs considerably from prior versions. In NetWare 4.x, it is easy "to accidentally" grant users access to files, directories and the enterprise network, Kane said.

"Since any object or user can be granted privileges to access any other object such as a database, file server or print server on a NetWare 4.x network, it's especially important that corporations ensure that end users are granted only the appropriate access rights," Kane said.

The KSA 2.0 utility costs \$495 per server license.

 Xyplex adds security to its hubs. See page 56.



Microsoft avoids a fight, IS wins

The specter of a battle with the Justice Department over the Intuit acquisition was a sobering one and one from which Microsoft wisely backed away.

The Redmondians have done their work well with Windows NT and BackOffice and can now capitalize on it among corporate IS. But one of the first things Microsoft must do is convince IS that it can listen as well as lead and that it can respond to others' needs as well as exploit its position of strength.

The prospect of giving IS the attention it deserves looked rather dim when Microsoft was headed for a knockdown dispute over acquiring a monopoly in personal finance applications. Bill Gates' vow to fight made it look as though Microsoft's first commitment was to dominating a future consumer market, not serving its existing commercial ones.

An IS manager had to wonder: If the Justice Department was having trouble making itself heard, how was the average IS shop going to get a hearing from Microsoft?

So the company has returned to earth, at least temporarily. Its real opportunity lies not so much in getting into home banking or TV set-top boxes as in getting onto corporate NT servers. Its success rate there is still low, but it looks as if that could change in the coming year. The well-funded Hermes project is now blossoming as Systems Management Server (SMS) in the BackOffice suite. SMS, SNA Server, Mail Server and SQL Server constitute the potentially integrated set of BackOffice.

"Suite" is still an optimist's word in describing this group of server products. I have no evidence that the information gathered by one server is used intelligently by another, but the need for a BackOffice suite is overwhelming. Microsoft is working hard to get the products to live up to their names.

Managing PCs, taking inventory of resources, upgrading operating systems and adding and deleting applications make up two-thirds of the burgeoning cost of PC maintenance.

Microsoft says it will bring these costs to heel.

Microsoft isn't the only vendor that can do this. Novell's NetWare 4.1 is finally shaping up as an enterprise PC manager. Independent suppliers such as Novadigm in Mahwah, N.J., are doing sophisticated, multiple LAN management from a remote server. But no one else who aspires to the task is in Microsoft's position of having revenue of \$321,500 per employee.

With its resources, Microsoft can take SMS and slim down what is currently a resource hog. SMS agents on desktops report to the server with each logon, thus offering an inventory of a PC's hardware and software. Remote technicians can troubleshoot individual end-user problems and download application or operating system upgrades.

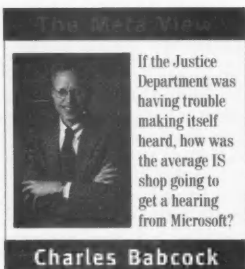
SNA Server already connects to and manages other hosts. SQL Server offers

data integrity and transaction processing features. Other parties do some of these tasks better than Microsoft, but they will have a hard time assembling all the pieces in an integrated package.

The BackOffice suite represents the playing out of the systems thinking that went into Windows NT. Other Microsoft technologies have fallen short in terms of IS's needs (OLE springs to mind), but BackOffice supplies systems management just in time. Customer demand for it will lay the groundwork for a lot of NT's success.

For Microsoft to take its eye off this rich prize to prove that the U.S. government had no business second-guessing its business decisions would have been an expression of corporate hubris. Backing off the Intuit fight shows that Microsoft's judgment is maturing and perhaps that its ability to address corporate IS is improving. It's unfathomable why Microsoft, having gotten this far, wouldn't give NT and BackOffice their best chances.

Babcock is *Computerworld's* technical editor. His Internet address is cbabcock@cw.com.



Charles Babcock

If the Justice Department was having trouble making itself heard, how was the average IS shop going to get a hearing from Microsoft?

Inside Lines

No group hugs for this bunch

One sight that PowerBuilder users won't see at their annual conference next week is a group hug among execs from Oracle and PowerBuilder's owner Sybase. More than a month after a self-imposed, end-of-April deadline, the database rivals have yet to sign a deal to play nice together. The companies were supposed to hammer out a deal to exchange certain APIs and other code related to their respective databases, enabling their development tools to support each other's databases. It hasn't happened yet, so users of the popular PowerBuilder 4.0 cannot easily access data stored on the latest Oracle database and vice versa.

Novell's Requester on the horizon

The wait will soon be over for Novell's NetWare Client for Windows NT requester. Novell is expected to make the requester available sometime in the next 10 days, says Willy Donahoo, Novell's director of product marketing for NetWare. Users will be able to download the requester software, free of charge, by logging into the NetWare forum on CompuServe. The NetWare Client requester provides Microsoft's Windows NT users with full access to all seven core services contained in NetWare 4.x, including security and directory services.

After you. No, after you. No, no! After you...

Keeping a close watch on each other, bitter mainframe disk rivals IBM and EMC will make back-to-back product announcements next Tuesday and Wednesday, although EMC's is targeted at the Unix market instead of System/390 users. IBM is releasing an upgrade of its Ramac mainframe array based on 4G-byte disk drives — twice the size of the current Ramac drives. EMC will follow the next day by introducing Unix versions of its Symmetrix arrays.

Musical jobs in networking

The long-past merger of the former SynOptics and Wellfleet into Bay Networks is creating some interesting job opportunities these days. Word around Silicon Valley is that many former SynOptics employees are jumping ship — many of them to chief Bay rival Cisco. Cisco just hired Bay's worldwide channels manager Steve Behm, charging him with building up the channel and relationships with carrier vendors such as Bell Atlantic and US West.

FileNet and Novell to team up

Workflow leader FileNet plans to make an announcement about its new relationship with Novell at this month's PC Expo in New York. Word leaked recently that the agreement involved adding FileNet's workflow and imaging software to the next version of Novell's GroupWise groupware product, although sources at both companies declined to comment.

Big iron on the P6 bandwagon

Unisys wants to be one of the first companies on Intel's P6 bandwagon when the next-generation chip ships late this year. Unisys' Pentium-based parallel processing Opus server can be upgraded to P6 in about two weeks, Ron Bell, Unisys' chief technology officer, said last week, although he wouldn't commit to actually shipping a P6 server that quickly. Bell also said the next major revamp of Opus, which ships this month, will put dozens of processors on a high-speed data bus, compared with four today.

Oh sure, there's important stuff like on-line commerce and the scientific data exchange going on over the Internet. But Oracle wants to make sure life's lighter side doesn't pass us by. So the company's Iceland office, along with two small Internet firms there, built a Web server dedicated to tracking The 14th Annual World Handball Championships in Reykjavik. The server, at <http://www.handball.is>, shows player bios, game plans and other exciting information — in both English and Icelandic. What next? Reports from the local Elks Lodge bowling league? Save us from having to watch by getting in touch with Computerworld about news items or tips. Call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179 or via the Internet at mjohnson@cw.com.

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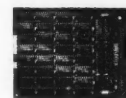
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